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III.—THE 'ABLAUT' OF GREEK ROOTS WHICH SHOW VARIATION BETWEEN *Ε* AND *Ο*.

The researches of comparative philologists have for the past few years been directed very largely to a closer study of the vocalism of the Indo-European languages, and have had the effect of almost totally overthrowing the labors of the preceding period in the same direction. The final opinions on vocalism of Schleicher, as laid down in the third edition of his 'Compendium' p. 10 ff (1870, edited by Leskien and Joh. Schmidt), and of Curtius in the fifth edition of his 'Grundzüge der Etymologie,' 1879 (Bk. I § 7), may be regarded as the ripest expressions of the views of the old school.

The treatises of Verner, Brugman, Fick, Collitz, De Saussure, Johannes Schmidt, etc.,[1] contain more or less directly and explicitly the opinions of the new school, and these opinions are now generally accepted in Germany.

1. The brilliant discovery of Verner, in which he successfully explained almost the last remaining exception to the first 'rotation

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[1] KARL VERNER: Eine Ausnahme der ersten Lautverschiebung; Kuhn's Zeitschrift XXIII 97–130.

KARL BRUGMAN: Nasalis sonans in der indo-germanischen Ursprache; Curtius' Studien IX 287–338.

KARL BRUGMAN: Zur Geschichte der stammabstufenden Declinationen; Curtius' Studien IX 363–406.

KARL BRUGMAN: Zur Geschichte der Nominal-suffixe *-as*, *-jas* und *-vas*; Kuhn's Zeitschrift XXIV 1–89.

KARL BRUGMAN: Die achte Conjugations-classe des altindischen und ihre Entsprechung im griechischen; Kuhn's Zeitschrift XXIV 255–288.

KARL BRUGMAN: Ueber einige griechische Praeteritalformen mit *a* vor der Personalendung; Bezzenberger's Beiträge II 245–255.

AUGUST FICK: Zum aorist und perfect Ablaut im griechischen; Bezzenberger's Beiträge IV 167–191.

HEINRICH COLLITZ: Ueber die Annahme mehrerer grundsprachlicher *a*-laute; Bezzenberger's Beiträge II 291–305.

HEINRICH COLLITZ: Die Entstehung der indo-iranischen Palatal-reihe; Bezzenberger's Beiträge III 177–234.

FERDINAND DE SAUSSURE: Mémoire sur le système primitif des voyelles dans les langues indo-européennes; Leipsick, 1879.

JOHANNES SCHMIDT: Zwei arische *a*-laute und die Palatalen; Kuhn's Zeitschrift XXV 1–179.

of mutes' of Grimm's law, was not of merely local importance. In explaining the exception he proved indirectly that *the accent of the Rig Veda in its broad outlines was once the accent of every Indo-European language;* that therefore it is a correct method to search for the effects of this accent where tradition has failed to bring it down to historical times (as in the German languages), or where it has been driven out by a new system (as in Greek).

2. The accentuation of the Veda is wedded to a phenomenon which penetrates the entire language. The syllable upon which the tone rests has a fuller vocalization than the others, especially those immediately preceding the tone. This causes the so-called strong and weak forms *é-mi* and *i-más*, *ta-nó-mi* and *ta-nu-más*, *pā́d-am* and *pad-ā́*, etc. Tracing these weak forms and distinguishing them from the strong ones not only on Indian ground but also in the European languages (a process rendered safe by Verner) led Brugman to *the discovery of lingual and nasal vowels* on a level with Indian *ṛ* and *ḷ*, occurring in every language of the family in parallel and identical formations, and manifesting therefore a phenomenon of the original I. E. language. Excepting *ṛ* and *ḷ*, in India the lingual and nasal vowels lack separate alphabetic signs and are expressed by certain fixed groups of letters. So Greek αρ and ρα represent Indian *ṛ*, Gr. αλ and λα = Ind. *ḷ*; so Sk. *a* and *an*, Gr. α and αν, are the expedients by which nasal vowels (*ṇ*, ν̣) are rendered, see p. 292 ff.

3. The time-honored opinion, which explained the European vowels *ă*, *ĕ*, *ŏ* (α, ε, ο) as later modifications of an original I. E *ă* which had been preserved intact in the Indo-Iranian languages, thus received its first shock; for it appeared that Sanskrit *ă*, when in connection with nasals it represented a nasal vowel, was a sound historically different from *ă* in other connections; while Greek α in connection with linguals as well as nasals was not the residue of the assumed original I. E. *ă*. This led Brugman to characterize *European ă, ĕ, ŏ* as *Indo-European*, an assumption which was destined to be verified from a totally different direction.

4. *This proof came from the Indo-Iranian palatal series*: Sk. *c*, *j*, *jh*, Zd. *c* (*sh*), *j* (*zh*), which is a modification of the first Indo-European guttural series k^1, g^1, gh^1. The close study of these inaugurated by Ascoli, Fick, and Hübschmann led at last to a recognition (simultaneous, as it seems, in various quarters, see p. 302) of the fact that they owe their origin, not as had been previously assumed to parasitic palatal vowels sounded after them,

but simply to the fact that a palatal vowel actually following the guttural changed it to a palatal, and that this palatal vowel was often in Indo-Iranian written *ă*, corresponding to European *e;* that therefore *this Indo-Iranian ă had at the period in which the palatals originated still a physiological value, which is best expressed by* a^e. So Brugman's assumption that the European triad *ă*, *ĕ*, *ŏ* was more original than the Indo-Iranian *ă* became an assured fact of science.

5. In what follows, the new acquisitions which have been thus briefly indicated will be brought to bear upon the subject announced at the head of this article. As an independent inference from these new facts we draw attention to the theory of the Indo-European root as laid down in the first section of this article. The treatises mentioned at the foot of page 281 will not be cited again, except where some special point is referred to.

I.

Close observation will not fail to teach that the root as assumed now for the separate languages of the I. E. family, as well as for the so-called original I. E. language, is based upon no definite principle; that its relation to the individual words to which it belongs or from which it is abstracted is arbitrary; and that grammatically speaking it fails to serve the purpose for which it is suggested, that, namely, of indicating a fixed element belonging in common to a certain body of words, varying only as affected by inflectional elements, according to tangible, well-authenticated laws of the language.

For the sets:

βάλ-λω	*κλέπ-τω*
ἔ-βαλ-ον	*ἐ-κλάπ-ην*
βέλ-ος	*κλέπ-ος*
βολ-ή	*κλοπ-ή*

it is customary to speak of roots *βαλ* and *κλεπ*, apparently the characteristic elements of the two present formations *βάλλω* and *κλέπτω*, and we might be led to think that it is the present which must furnish the root.[1] But in the sets—

λείπ-ω	*ἐλεύ(θ)-σομαι*	*λα-γ-χ-άνω*	*λα-ν-θ-άνω*
λέ-λοιπ-α	*ἐλ-ήλουθ-α*	*λέ-λογχ-α*	*λέ-ληθ-α*
ἔ-λιπ-ον	*ἤλυθ-ον*	*ἔ-λαχ-ον*	*ἔ-λαθ-ον*

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[1] Curt. Et^5. p. 53, would assume couplets of roots for these sets, *βαλ*, *βελ* and *κλεπ*, *κλαπ*, giving precedence to that form which occurs in the larger number of formations.

we are accustomed to find the roots λιπ, ἐλυθ, λαχ and λαθ, the essential parts of the respective second aorists, the weakest form of the root. This would, however, if consistently carried out, lead to a root πραθ for the group represented by πέρθ-ω, πορθέ-ω and ἔ-πραθ-ον; to a root πραδ or παρδ for the group represented by πέρδ-ομαι, πέ-πορδ-α, ἔπραδ-ον or ἔπαρδ-ον. Further, if consistent, we must assume a root πτ for the group represented by πέτ-ομαι, πότ-μος, ἐ-πτ-ό-μην; a root σχ, contained in ἔ-σχ-ον, a root σπ in ἔ-σπ-ον; a root πλ in ἔ-πλ-ε-το; a root ἀγρ in ἀγρ-ό-μενος; further a root τμ in ἔ-τε-τμ-ον; a root φν in ἔ-πε-φν-ον; a root κλ in ἐ-κέ-κλ-ε-το, etc., for all these are on a level with ἔ-πιθ-ον, ἔ-λαθ-ον, etc., or

ἔ-πραθ-ον : ἔ-πιθ-ον = πέρθ-ω : πείθ-ω.

The most striking example of the difficulty above delineated is presented in the very old words εἶμι and εἰμί. These are non-thematic (root) presents and exhibit forms of the root in the singular which are different from those of the dual and plural.

	εἶ-σι	:	ἴᾱ-σι	=	ἐσ-τί	:	ἐντί	(= σ-εντι) Doric
Sk.	aí-ti (éti)	:	i-ánti	=	ás-ti	:	s-ánti	
Goth.				=	is-t	:	s-ind	
Lat.				=	es-t	:	s-unt	

If we assume ι as the root of εἶ-μι, we must accept σ as the root of εἰμί (ἐσ-μι).

This is not all, however. As it is accepted by most linguists that roots are but abstractions from the facts of languages, that they are mere grammatical preparations, we might be content to accept roots of the form σχ, κλ, φν and even σ, as we accept πιθ and ἐλυθ, provided that they successfully furnish that characteristic element in a group of words which is sought after. This is, however, not the case. The root φν by itself utterly fails to account for φα of πέ-φα-ται and φα-τός, and φον of φόν-ος; and it would therefore be necessary to assume several roots φν, φα, φον; and this last is generally seen in intimate contact with a form that has an ε, in this case contained in θείνω (= θεν-jω) see p. 305; so τα in τα-τός (on the same level with φα-τός) necessitates an additional τεν (τείνω), ταν (ταν-ύ-πτερος), τον (τόν-ος); the root hitherto designated as μεν (μέν-ος) must be supplemented by μον (μέ-μον-α), μα (μέ-μα-τον), μαν (μαν-ία) and μν (μί-μν-ω); the roots πιθ and ἐλυθ by πειθ, ποιθ and ἐλευθ, ἐλουθ.

If some fixed, reasonable principle, supported by wide analogies, not sporadic, not making its appearance arbitrarily here and there, can be found by which the many forms of the root as shown above can be derived from one, we shall be content to accept that one as *the root* κατ' ἐξοχήν. The attempt has been made on Greek ground only in the case of roots of the type πιθ and ἐλυθ. The theory of *guna*, created by the Hindu grammarians, has explained πείθ-ω and ἐλεύ(θ)-σομαι as containing a form of the root in which an additional strengthening or extending element had developed itself owing to accentual stress. On Indian ground the rule had a wider range than on Greek, on account of the existence of distinct written characters for the lingual vowels *ṛ* and *ḷ*. The Hindu theory strengthens *ṛ* in *dṛç* and *ḷ* in *kḷp* to *ar* and *al* in *darç* and *kalp*, as well as *bhid* and *budh* into *bhaid* and *baudh*. Even so far the Greek follows, but with difficulty; Sk. *á-dṛç-am* is sound for sound = ἔ-δρακ-ον; shall we say that δερκ and δορκ in δέρκ-ομαι and δέ-δορκ-α are the result of *guna* from δρακ, as Hindu grammar explains *darç* in *da-darç-a* (= δέ-δορκ-α) from *dṛç?* Or are βελ, βολ the result of guna from βαλ (ἔ-βαλ-ον), κλεπ, κλοπ from κλαπ, etc.?

From this point the *guna* theory begins to become difficult on Indian as well as on Greek ground. Roots containing *nasals*, if they are to be treated in the same way as those containing *linguals*, would compel us to assume that *man* and *tan* are results of *guna* from *ma*, *ta*, for these are on the same level with *dṛc* and *kḷp*, as the following proportion shows:

dṛṣ-ṭás and *kḷp-tás* : *ma-tás* and *ta-tá-s* =
darç- and *kalp-* : *man-* and *tan-*

In Greek we must, to be consistent, assume that μεν, μον are gunated μα, πενθ, πονθ gunated παθ, etc.; for—

ἔ-παθ-ον : πείσομαι (πενθ-σ) and πέ-πονθ-α =
ἔ-δρακ-ον : δέρκ-ομαι and δέ-δορκ-α =
ἔ-πιθ-ον : πεί(θ)-σομαι and πέ-ποιθ-α, etc.

Yet the *guna* theory can be urged as far as this if necessary. As will be shown below (p. 292 ff) the sound-groups ρα in δρακ-, λα in κλαπ-, αλ in βαλ, ρα and αρ in ἔ-πραδ-ον and ἔ-παρδ-ον are in reality precisely equal to the vowels *ṛ* and *ḷ* in Sk. (cf. *ĕrĕ* in the Avesta), and owe their composite character to the inadequacy of the Greek alphabet to express by separate characters all the sounds which the language possessed; and it would therefore still not be impossible to assume that the accentual stress, which is the supposed cause of *guna*, developed, out of the semivocalic sounds *ṛ* and *ḷ*, αρ, ρα = ρ̣ and αλ, λα = λ̣, the fuller sound groups *ar* and *al*, ἔρ (ὀρ) and ἔλ (ὀλ). And in the same way we may deal with the nasal roots in Sk. as well as in Gr. upon the basis of the insufficiency of the alphabets, which the course of this article will have occasion to reveal in more than one direction. So in Sk. as *ta-tás*, *ma-tás*, *bad-dhás* and *çrab-dhás* really contain nasal vowels[1] (see p. 297), which are on a level with the lingual *ṛ* and *ḷ*; so also the Gr. α in ἔ-παθ-ον, μέ-μα-τον, φα-τός and τα-τός in reality represents a nasal sound; and the assumption of πενθ, πονθ, μεν, μον, etc., as gunated forms of παθ (= πν̣θ), μα (= μν̣) would be quite as well justified as the gunated roots *darç*, δερϰ from *dṛc*, δραϰ (= δρ̣ϰ).

The soundness of the foregoing processes would be guaranteed by the character of linguals and nasals throughout our family of languages. These have a well-known tendency, everywhere authenticated, to develop vocalic elements in their neighborhood (*svarabhakti*), and a form *dṛç*, *mṇ*, δρ̣ϰ, μν̣, if granted to start with, would quite as naturally be strengthened by the accent into *darç*, *man*, δερϰ, μεν, as *bhid*, *budh*, λιπ, φυγ into *bhaid*, *baudh*, λειπ, φευγ.

From this point the *guna* theory fails totally. We have seen that if we assume roots λιπ, πυθ, δρ̣ϰ (δραϰ), ϰλ̣π (ϰλαπ), etc., we must also assume roots πτ, σχ, σπ and σ. Shall we say that πετ is the gunated form of πτ, σεχ of σχ, or εσ of σ? It is surely a false method to assume even in theory that a group of sounds, in itself unpronounceable, was thus raised to a real existence by receiving the accent; moreover, if we do start with such a group, it would still be necessary to prove that accentual stress will change πτ into πετ or σπ into σεπ, or finally σ into ἔσ; surely a difficult task to perform.

The Gothic, which has preserved original variations of root-vowels better than any other I. E. language, is perfectly at one with Greek and Sanskrit in objecting to the weakest form as the root of words and explaining the other forms by *guna*. We can here also assume roots *stig* and *bud*, and say that *steig*, *staig* and *biud*, *baud* are gunated forms; we could under pressure put up with roots *bund* (= *bṇd*), *mun* (= *mṇ*), *vaúrþ* (= *vṛþ*), *stul* (=*stḷ*), and regard *bind*, *band*, *min*, *man*, *vaírþ*, *varþ* and *stil*, *stal* as gunated forms; but shall scarcely concede that *ita* contains *guna* of *t* and *i(s)m guna* of *s*, etc.

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[1] The morphological value of such forms might, if in transliteration an attempt to 'go behind' the *devanāgarī* alphabet were made, be more exactly expressed by *tã-tás*, *mã-tás*, etc., in the way in which nasal vowels are transcribed in Zend.

The difficulties described have led to arbitrary, inconsistent, and in many cases insufficient roots in grammars and lexicons for the special languages and in comparative treatises for the so-called I. E. language.

Looking at random through a number of pages of Curt. Etym.^{5} (1879) we find for the group of words treated under nr. 354 the roots πενθ and παθ; for 637 the root βαλ; for 633 root τρεπ; for 615 root ι; for 564 root ἐσ; for 230 the roots τα, τεν, ταν; for 128 the roots γεν, γα; for 429 the roots μεν, μαν. The inconsistency of a root βαλ side by side with τρεπ, of ι and ἐσ, need no more be pointed out. Nor is it clear what is meant by assuming two roots such as παθ and πενθ, or three such as τα, τεν and ταν; if we have a root γα (γεν, γα) for such a form as γέ-γα-τον, why do we not find μα (in addition to μεν, μαν) for μέ-μα-τον? In fact Curtius gets at his roots by hardly anything else than by grasping at random one or more forms belonging to a certain group, removing the inflectional elements, and putting the remainder down as root or roots.

The Hindu grammarians are inconsistent because they do not in every possible case regard the weakest root-form as the root. In accordance with *ric*, *budh*, *dṛç*, *kṛ*, *çru*, etc., they should have *stha* or *sthi*, *dha* or *dhi* instead of *sthā* and *dhā*.

The St. Petersburg Sanskrit lexicon everywhere rejects the weak form of the root, excepting those that contain *i* or *u*. So it gives us as roots *sthā*, *dhā*, *dhar*, *darç*, *kar*, *man*, etc., but also *bhid*, *budh*, *çru*, etc. But if the root appears unmodified in the passive participles *bhin-nás*, *bud-dhás* and *çru-tás*, why does it not in the pass. participles *dhṛ-tás*, *ma-tás*, etc.? On the other hand, if it assumes *darç* as the root of *dṛṣ-ṭás*, it should also give *bodh* as the root of *bud-dhás*, etc., etc.

Grassmann felt this difficulty when he decided that the suffixless verbal adjective coincided with the root (Grassmann, Wörterbuch z. Rig Veda, Preface pp. v and vi). He recognized the principle that the root of one group of words must be consistent with that of another; that if such forms as *bu-budh-imá* and *rik-tás* would yield the root on removing inflectional elements and euphonic modifications, *da-dṛç-imá* and *kḷp-tás* must yield it under the same circumstances; but when he assumes roots such as *gir*, *kir*, *tir*, *tur*, etc., he fails to remove the accidental modifications by which the verbals which yield him these roots are affected. The sound-groups *gir*, *kir*, *tir*, etc., are modifications of *gṛ*, *kṛ*, *tṛ*, etc. before vowels (*gir-áti* = *gṛ-áti*; *tir-áte* = *tṛ-áte*; cf. *sṛj-áti*) or at the end of a word.[1] If Grassmann had abstracted his root from all weak formations in each group of words instead of restricting himself to the suffixless verbal, he might have obtained a result scientifically more satisfactory, though still not correct.

Still more serious is another difficulty in the way of the *guna* theory. Roots with the vowel *i* and *u seem* to present but one form of *guna* as long as we remain on Indian and Iranian ground; *ric* becomes *raic* and *budh* becomes *baudh.* But *raic* = Gr. λειπ and λοιπ = Goth. *leib*[2] and *laib;* shall we then recognize two kinds of *guna* in Greek and German? Hitherto, to be sure, the two forms λειπ and λοιπ were regarded as variations in two different directions of an original λαιπ = *raic;* in the same way Goth. *leib* and *laib* were viewed as the result of a division of *laib* = *raic;* all this falls to the ground to-day, because *raic* covers two forms, which may be differentiated by writing *ra*^{e}*ic* (= λειπ = *leib*) and *raic* (= λοιπ = *laib*), as will be shown on p. 301 ff. The vowel variation of the couplets λειπ-λοιπ, ἐλευθ-ἐλουθ, γεν-γον, etc., reaches back to the earliest period of our family of languages, as far as the deepest investigation of scholars has pierced. It is the keynote, the starting-point from which the vocalism of every I. E. language must be investigated. This fact decides the fate of *guna;* which, though it never had been proved, still seemed to explain the phenomena of *i* and *u* roots, as long as philology dealt with but one original strong form which had the vowel *ă*. Then it was merely a question of quantity and weight, and accentual stress offered a plausible explanation. To-day it is still a question of quantity, but also one of quality. The accentual heightening, if it still be accepted, must have also possessed the power of changing λιπ into λειπ in certain fixed positions (see p. 314 ff) and λιπ into λοιπ in certain others (p. 318 ff); a fact which it is impossible to prove.

The last consideration forces upon us a solution of the problem as far as logic and grammar are concerned. Whenever the question of priority arises between a root-form λιπ on the one hand and λειπ-λοιπ on the other, the weak form must be regarded as a reduction.[3] λειπ as well as λοιπ, if occasion for reduction or weakening should present itself, would both naturally reduce to λιπ, while there is no reason to assume that *λιπ* can be heightened by the effect of accent into both *λειπ* and *λοιπ*. It is therefore the converse of *guna* which grammar must see in verbal formations when strong and weak root-forms alternate with one another. So in the non-thematic presents *ἴ-μεν* : *εἶμι* ; *ἐντί* (*σ-εντι*) : *εἰμί* (*ἐσ-μι*) ; Sk. *s-ánti : ás-mi ; vid-más : véd-mi ;* Goth. *s-ind : i(s)-m ;* Lat. *s-unt : es-t ;* the root, as it appears in the first forms, can *without inconsistency* be regarded by grammar as a reduction of the second owing to the shift of accent from the root to the inflective element. Similarly the perfect is a non-thematic formation, and had originally, in all languages of the family, forms for the singular active which had the accent on the root, therefore also a strong form of the root;[1] the dual and plural active as well as the middle shift the tone from the root to the suffix, and therefore have the weak form of the root (identical with the weak form of a non-thematic present). In Sanskrit and German this original condition has been preserved with almost ideal regularity : Sk. *bi-bhaíd-a : bi-bhid-ús ; va-várt-a : va-vṛt-ús ; vaíd-a : vid-ús ;* Goth. *bait : bit-un ; varþ : vaúrþ-un ; vait : vit-un*, etc. In Greek this relation has been largely disturbed ; but still a respectable body of perfects have preserved traces of it : *ἔ-(Ϝ)οικ-α* : *ἔ-(Ϝ)ικ-τον* ; *μέ-μον-α* : *μέ-μα-μεν* (= *με-μν-μεν*), *οἶδ-α* : *ἴδ-μεν*, etc. ; in the same way we have the reduction from *ᾱ*(*η*) to *ᾰ* in *λέ-ληθ-α* : *λέ-λασ-ται* ; *πέ-φην-α* : *πέ-φαν-ται*, etc. ; see p. 324.

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[1] The modification at the end of a word is often avoided by adding *t: bhṛ́-t, kṛ́-t, hvṛ-t,* etc.

[2] *leib* in pronunciation has the value of *līb.*

[3] This term is purely relative and provisional; we will below take occasion to put the phenomena, which here give rise to it, in a different light.

It has been stated above and will be proved below (pp. 301 ff and 307) that the root forms *λειπ* and *λοιπ* are on the same level as far as claim to the name of root is concerned. Historically speaking, they run parallel with one another from the earliest period upon which investigation has cast light. Grammatically speaking, the one occurs in formations as legitimate, primary, and important as the other. From the standpoint of physiology of sound there is nothing which would give precedence or priority to either *λειπ* (Sk. *raᵉic*, Goth. *leib*) or *λοιπ* (Sk. *raic*, Goth. *laib*).

If then the root is to be looked for in the strong forms, the result is a double root where there exist two strong forms, a single root where there is but one. We should arrive then at such roots for the Greek : *πετ-ποτ*, *δει-δοι* (in *δέ(y)-ος* and *δέ-δοι-κα*) ; *χευ*, *χου* (in *χέ(Ϝ)-ω* and *χο(Ϝ)-εύς*) ; *λειπ-λοιπ* ; *ἐλευθ-ἐλουθ* ; *μεν-μον* ; *στελ-στολ*, *πενθ-πονθ*, etc. ; single roots *λᾱθ*, *λᾱβ*, *φᾱ*, *στᾱ*, etc. The *weakest* form *πτ*, *δι*, *κλυ*, *λιπ*, *ἐλυθ*, *μν*, *στλ*, *πνθ*, *λᾰθ*, *φᾰ*, *στᾰ*, etc., has provisionally been termed a *reduced* form. It will not require very keen perception or close scrutiny to perceive that the term '*reduced*' is false. We must here watch lest grammatical method and terminology obscure the facts of language. In *ἴ-μεν* : *εἶ-μι* *ι* is no more a reduction from *εἰ*, than *εἰ* the *guna* of *ι*; they are forms as perfectly independent of one another as *λείπω* and *λέλοιπα*, as *βέλος* and *βολή*. When the form *ἴ-μεν* (originally *ἰ-μέν*) came into existence *it did not start from an accented base εἴ*, which lost its accent, with it an *ε*, and became *ι*; all that can be said is that words of this group when they have the accent on formative elements appear with the radical or significant element *ι*, when they have the accent on the root, with one of the two radical elements *εἰ* or *οἰ*. In corroboration of this it is to be especially noted that there are formations reaching back to the earliest times which have the weakest form of the root, but are utterly independent of any strong form; so the adjective formation in *u* (*υ-ς*) : Sk. *dhṛṣ-ú-s* sound for sound = *θρασ-ύ-ς* and (*θαρσ-υ-ς* in) *θαρσ-ύ-νω*; Sk. *tṛṣ-ú-s* = Goth. *þaúrs-u-s*; so the abstract formation in *ti* : Sk. *bhṛ-tí-s* = Lat. *for-*(*ti*)*-s* = Goth. (*ga*)*-baúr-þ-*(*i*)*-s*; so the participle in *tá* (verbal in *τό-ς*): *ta-ṭá-ṣ* = *τα-τό-ς* are original I. E. formations, which have the tone on the suffix, therefore the weak root-form, but are totally independent of strong formations of any kind (see p. 325 ff).

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[1] Wherever the variation *ε* : *ο* appears in a root, it is the strong form which has *ο* : *λέ-λοιπ-α*, *μέ-μον-α*, etc.

If what we have stated is in accordance with the facts, the idea of a single root falls to the ground. We have in word-groups which show the variation between *ε* and *ο* a root-system consisting of three forms, two strong ones and one weak one; in all other word-groups a root-system of two forms, a weak one and a strong one. Designating the first class by AA, the second by BB, we have:

CLASS AA.		CLASS BB.	
Strong Forms.	Weak Forms.	Strong Forms.	Weak Forms.
I. *μεν* II. *μον*	III. *μν*	I. and II. *στᾱ*	III. *στᾰ*
I. *πειθ* II. *ποιθ*	III. *πιθ*	I. and II. *θη*	III. *θε*
I. *πετ* II. *ποτ*	III. *πτ*	I. and II. *λᾱθ*	III. *λᾰθ*
etc.	etc.	etc.	etc.

All other root-forms are modifications of these ground-forms; *e.g.* *μα-* in *μέ-μα-τον* and *μαν-* in *μαίνομαι* (= *μαν-yομαι*) are but modifications of *μν*, having their cause in the character of the inflectional elements which appear in connection with the root; in the same way *τραφ* and *ταρφ* in *ἔ-τραφ-ον* and *ταρφ-ύς* are but graphical expedients for rendering the sound-group *τρφ* (*τρ̣φ*) in the root-system *τρεφ*, *τροφ*, *τρφ*, etc. Hereafter we will designate a root-form like *μεν*, *χευ* or *χε*(*Ϝ*), *πειθ*, *πετ*, etc., as ablaut I; *μον*, *χο*(*Ϝ*), *ποιθ*, *ποτ*, etc., as ablaut II; *μν* (*μα*, *μαν*), *χυ*, *πιθ*, *πτ*, etc., as ablaut III. It now behoves us to prove the facts which in the course of this deduction have been taken for granted, before accepting this sweeping innovation and its far-reaching consequences.

II.

From the first days of the comparative study of the I. E. family of languages up to the year 1876, it was held almost without a dissenting voice[1] that the body of short vowels which the so-called original I. E. language possessed consisted of *a*, *i*, *u*. Of these *a* was supposed to have remained unchanged in the Asiatic division of the family, the Indian and Iranian languages; while in the European languages it had in a large proportion of cases been weakened into *e* and *o*, the sounds holding physiologically a middle position respectively between *a* and *i* and *a* and *u*. An exhaustive investigation of this supposed breaking up of I. E. *a* on European ground was made by Curtius in 1864.[2] It resulted in establishing the fact that the deviation of *a* into *e* occurred on the whole in the same words and formations in all of the European languages; that it could not have taken place in each one of them independently of the others; that therefore a common European language must be assumed; from this the several European languages had separated, as the Iranian and Indian languages had done from a common Indo-Iranian language. On the other hand the coloring of *a* into *o* had taken place later and separately in the several European branches, because the *o* of one branch does not accord with the *o* of another.

Fick in his book 'Die Spracheinheit der Indo-Germanen Europas' makes use of Curtius' results in the same direction; he also holds to an I. E. *a* which in Europe divided itself into *a* and *e*; of these two, *a* again was resolved in the separate European branches into *a* and

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[1] See 'Morphologische Untersuchungen,' von Osthoff und Brugman, III 91 ff.

[2] Die Spaltung des *a*-lautes; sitzungsberichte der königlich. sächsischen Academie der Wissenschaften, 1864.

o. The vowel system of Schleicher, which on the whole is artificial (comp. 10 ff), does not deviate in any material respects from those above mentioned, as far as the short vowels are concerned.

Two points which are the result of this system of short vowels are to be carefully noted:

1. In Sanskrit *a* is throughout the language one and the same vowel, being everywhere the direct descendant of the original Indo-European *a*.

2. Greek ᾰ represents throughout the language what has been left undisturbed of the original I. E. *a*; a large part of this latter having been changed to ε and ο.

The first serious attack upon this system of short vowels struck at the two rules which have been deduced. In Vol. IX of Curtius' Studien there appeared the famous article by Karl Brugman entitled 'Nasalis Sonans,' etc., which for the first time definitely proved the negative of these two rules. It will not be necessary to go through Brugman's proofs. Though his article furnished the key to the understanding of the I. E. linguals and nasals, and more or less directly has formed the basis for most of the successful investigations on vocalism since that day, principles which are laid down there can now be presented in a more comprehensive fashion, owing to further investigations by Brugman himself and by others.

Brugman starts with the discussion of an interesting fact which Sievers teaches in his 'Lautphysiologie,' p. 26 ff. He observes that in the usual pronunciation of words containing nasals (*n*, *m*) and liquids (*r*, *l*), these are pronounced both as vowels and as consonants. As vowels they form in connection with one or more consonants a distinct syllable, just as any other vowel. So in 'sieben mal acht' (*sie-bṇ*), 'wir ritten nach hause' (*rit-tṇ*), 'tändeln' (*tän-dḷn*), 'wandern' (*wan-dṛn*); English examples would be: 'the father is' (*fa-thṛ*), 'ankle' (*an-kḷ*), 'heaven' (*hea-vṇ*), 'handsome' (*han-sṃ*), etc. On the other hand the consonantal pronunciation of linguals and nasals is seen in '*beritt-ne*' : 'beritten' (*berit-tṇ*); '*ath-me*' : 'a-them' (*a-thṃ*); Engl. '*ank-let*' : 'ankle' (*an-kḷ*), etc. The alphabets of these languages fail to furnish separate characters for these two classes of sounds; a fact which of course in nowise throws a doubt on their existence.

The Vedic and Sanskrit, as is well known, do possess distinct characters for lingual vowels, which are transcribed in the manner in which we have differentiated them in German and English from their corresponding consonants: viz. *ṛ* and *ḷ*.

The change between the lingual consonants and lingual vowels is quite analogous to that between *y* and *i* and *v* and *u;* before vowels there always appears the consonantal pronunciation *r* and *l*, *y* and *v;* before consonants the treatment of the linguals, though in principle the same as that of the dental and labial vowels, is characterized by a smaller degree of sensitiveness than these. While the latter always appear as *i* and *u* before consonants, *r* and *l* are changed to their corresponding vowels only when preceded as well as followed by consonants, or in the beginning of a word when followed by a consonant. A few examples will suffice. As the weak forms of the perfect of the verb *nī*, 'to lead,' appear as *ni-ny-* before endings beginning with a vowel, so do the weak forms of the verb *kar* appear as *ca-kr-* in the same connections: *ni-ny-á*, *ni-ny-ús*, *ni-ny-é : ca-kr-á*, *ca-kr-ús*, *ca-kr-é;* but between consonants the semi-consonantal elements of these roots appear as vowels: *nī-tá-s*, *kṛ-tá-s*, *çru-tá-s;* so also the same change is seen in *i-más : y-anti;*[1] in *ca-kṛ-má : ca-kr-ús;* in *tu-ṣṭu-má : tu-ṣṭuv-ús* (for *tu-ṣṭv-ús*); cf. *cā-kḷp-ré.*

The difference between *r* and *ṛ* is clearly expressed in Zend, though not by a distinct character for *ṛ*. This is regularly rendered by the group *ĕrĕ* (where the *ĕ*'s can hardly have had more than the value of two *sh'va's: kĕrĕ-ta-* = Sk. *kṛ-tá-s; pĕrĕç-* = Sk. *pṛch;* cf. the definition given by the Prātiçākhyas of the value of Sk. *ṛ* = ¼ *a* + ½ *r* + ¼ *a.*

The Sanskrit does not possess distinct characters to express nasals between two consonants (nasal vowels); these, however, indicate their presence by very distinct and peculiar phenomena. As we have *y : i; v : u; r : ṛ* and *l* to *ḷ*, we have also *n : ṇ* and *m : ṃ*. *ṇ* and *ṃ* appear almost always as simple *ă*, sometimes as *ăn* (*ăm*); this *an*, which is the phonetic equivalent of *ṇ*, can be differentiated from *an* = *a* + *n* by the aid of the Greek; while the latter *an* corresponds to Gr. εν or ον, the former appears in Greek also as αν, occurring there as well as in Sanskrit only in formations which require the weak form of the root (ablaut III). So *mán-as* (*an* = *a* + *n*) = μέν-ος; *ma-mán-tha* (*an* = *a* + *n*) = Gr. με-μον-α; but *mán-ye* for *mṇ-ye* corresponds to Gr. μαίνομαι for μαν-yομαι for μν̣-yομαι.

A fine example of *ṇ* in Sanskrit and its double treatment is offered by the verb *han*; as we have *i-vás*, *i-thás*, *i-tás*, *i-más*, *i-thá*, but *y-ánti*, we have a theoretic conjugation: *ghṇ-vás*, *ghṇ-thás*, *ghṇ-tás*, *ghṇ-más*, *ghṇ-thá*, but *ghn-ánti*, which appears as *han-vás*, *ha-thás*, *ha-tás*, *han-más*, *ha-thá*, but *ghǹ-ánti*. The consonantal *y* before a vowel is matched by the consonantal group *ghn* in *ghn-ánti* before a vowel; the vowel *i* before consonants in the other weak forms corresponds to *ghṇ* before consonants; the treatment of this *ghṇ* varies according to the nature of the consonant following: it becomes *(g)ha*[1] before full consonants (*t* and *th*); before semi-consonants (*m* and *v*) it develops an additional vocalic element, written *ă* but having physiologically much less weight than *ă* (= Gr. ε) in *hán-mi*, as the pronunciation of *hán-mi* against *han-más* (if attention is paid to the accent) will readily show. The single paradigm of *hán-mi* vindicates and explains upon a satisfactory physiological basis the existence of the vowel *ṇ* by the side of the consonant *n*. An instance of the appearance of *m* and *ṃ* is offered by the root *gam*. Its weak forms are *gm* before vowels and *gṃ* before consonants; *gm* appears in *ja-gm-ús*, *gm-án*, etc.; *gṃ* appears as *ga* before a full consonant in *ga-tás* (cf. *ha-tás*); in *ga-chā́mi* (cf. *yu-chā́mi*, *ya-chā́mi*, etc.), in the form of *gam* before a semi-consonant in *gam-yā́s* (2d sing. opt.; cf. *i-yā́m*, *s-yā́m*, *han-yā́m*, etc.)

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[1] To write *i-ántu* (R. V. VIII 60, 10), etc., does not render correctly the actual physiological value of the form; *y-ántu* is the correct and common method.

There appear then in Sanskrit instead of merely the sounds *y-i*, *v-u* as mediators between vowels and consonants, the very considerable body which is made up by these and the linguals and nasals in addition. The Sanskrit system of semi-consonants is as follows:

Consonants:	*y*	*v*	*r*	*l*	*n*	*m*
Vowels:	*i*	*u*	*ṛ*	*ḷ*	*a*, *an*	*a*, *am*

This proves the contrary of rule 1 deduced on page 292. Sanskrit a *is not everywhere the same sound and not everywhere the direct representative of Indo-European* a. The I. E. *a* will suffer further infringements in the course of our discussion, until it will have shrunk into comparative insignificance.

This variable function of semi-consonants is by no means restricted to Sanskrit. In every language of the family these sounds occur, but with still less perfect systems of expression. In Sanskrit there are at least distinct characters for lingual vowels; in the other languages these as well as the nasal vowels lack single characters, and are everywhere expressed by combinations similar to those which are found for nasal vowels even in Sanskrit. The following is the system for the Greek:

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[1] Cf. the note on page 286.

Consonants:	(*y*)[1]	(Ϝ)[2]	ρ	λ	ν	μ
Vowels:	ι	υ	αρ, ρα	αλ, λα	α, αν	α, αμ

Note. The *consonants* ρ, λ, ν and μ are occasionally split into αρ, αλ, αν and αμ; a phenomenon quite parallel with the breaking up of *y* and *v* in Sanskrit into *iy* and *uv*. So we could and should have second aorists ἔ-βλ-ον, ἔ-χν-ον, ἔ-τμ-ον, ἔ-δρ-ην, etc., as we have ἔ-σχ-ον and ἐ-πτ-ό-μην; but we have ἔ-βαλ-ον, ἔ-χαν-ον, etc. So we could have in Sanskrit *dī-dy-ús* and *ju-hv-é*, where we have *dī-diy-ús* and *ju-huv-é*. In a number of instances a vowel is necessarily developed even before a suffix beginning with a vowel on account of an accumulation of consonants before the suffix too difficult to pronounce; so in ἔ-πταρ-ον for ἔ-πτρ-ον, ταν-ύ- for τν-ύ; Sk. *çu-çruv-é* for *çu-çrv-é*, *çi-çriy-é* for *çi-çry-é*. Probably such forms as these furnished the starting point for the introduction of this vowel in connections where it was not phonetically necessary. A form ἔ-πταρ-ον, etc., would give rise to ἔ-βαλ-ον, ἐ-δάρ-ην, etc., as *çu-çruv-é*, *çi-çriy-é*, etc., to *ju-huv-é*, *dī-diy-ús*, etc.

The following is the system for Gothic and High German:

Consonants:	*j*	*v*	*r*	*l*	*n*	*m*
Vowels:	*i*	*u*	Goth. *aúr* H. G. *or*	Goth. *ul* H. G. *ol*	*un*	*um*

The following is the system for Latin:

Consonants:	*j*	*v*	*r*	*l*	*n*	*m*
Vowels:	*i*	*u*	*or*(*ur*)	*ul*(*ol*)	*en*	*em*

The coincidence in the various languages of the family of the consonant rows, as also of *i* and *u* of the vowel rows, is a well-established fact of comparative philology. For the Greek we have below worked up as nearly as possible the entire material as far as lingual and nasal vowels are concerned. In the arrangement of the evidence we take Greek or Sanskrit as our starting point, according as the one or the other happens to have forms which are found in the other related languages. We will restrict our enumeration to forms which seem clear beyond a doubt.

I. A few old substantives of various formations:

With ling. vowels: χαρδ-(ία) and χραδ-(ία) = Lat. *cord-*. Sk. *ṛ́ksh-a-* = ἄρκτ-ος = Lat. *ursus* (*urcs-us*). Sk. *kṛ́m-i-s* = Goth.

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[1] In δέ(*y*)-ος; cf. δέ-δοι-κα; κέ(*y*)-ομαι; cf. κεῖ-μαι.

[2] In χέ(Ϝ)-ω; cf. χεύ-ω; in κλέ(Ϝ)-ος = Sk. *çráv-as*.

vaúrm-(i)-s. Sk. *ūr-ṇā́* (for *vṛ-ṇā́*, as *pūr-ṇá-s* for *pṛ-ṇa-s*) = Goth. *vul-la* (for *vul-na*, as *ful-l(a)-s* for *ful-na-s*). Sk. *vṛ́k-a-s* = Goth. *vulf-(a)-s* = λύκ-ο-ς for ϝλακ-ο-ς; the ϝ imprinted its labial quality upon the α, changing it to υ. With nasal vowels: ἑκατ-όν = Sk. *çat-ám* = Goth. *hund-* = Lat. *cent-um*.

II. Abstract nouns in *tí*:

With ling. vowels: δάρ-σι-ς = Goth. *(ga)-taúr-þ(i)-s*. Sk. *bhṛ-tí-s* = Zd. *bere-ti-* = Goth. *(ga)-baúr-þ(i)-s* = Lat. *for-(ti)-s*. Sk. *mṛ-ti-s* = Lat. *mor-(ti)-s*.

The Sk. abounds in words of this formation: *ṛ-tí*, *ṛsh-ṭí*, *sṛ-tí*, *sṛ́ṣ-tí*, etc. (Lindner, Altindische Nominalbildung, 77). The Greek has the following in addition: κάρ-σι-ς, στάλ-σι-ς and ἀγαρρίς· ἄθροισις (Hesych.) for ἀγαρ-σι-ς; Goth. in addition: *þaúrf-t(i)-s* and *(fra)-vaúrh-t(i)-s*. With nasal vowels: Gr. τά-σι-ς = Sk. *ta-ti-s* = Lat. *ten-ti-(on)*. Gr. βά-σι-ς = Sk. *gá-ti-s* = Goth. *ga-gum-þ(i)-s*. Sk. *ma-tí-s* = Lat. *men-(ti)-s*, *men-ti-(on)* = Goth. *(ga)-mun-d(i)-s*. Gr. in addition ῥάψις; cf. ῥομφ-εύς.

III. Adjectives in *u*.

With ling. vowels: Gr. θρασ-ύ-ς and θαρσ-υ- (in θαρσ-ύνω) = Sk. *dhṛṣ-ú-s*. Gr. βραδ-ύ-ς = Sk. *mṛd-ú-s*. Gr. βραχ-ύ-ς, to be compared with Goth. *maúrg-jan*, 'to shorten'. Gr. πλατ-ύ-ς = Sk. *pṛth-ú-s*. Sk. *tṛsh-ú-s* = Goth. *þaúrs-u-s*. Gr. in addition: κρατ-ύ-ς and καρτ-υ- (in καρτ-ύνω); ταρφ-ύ-ς. Sk. in addition: *nṛt-ú-s*, *ṛj-ú-s*, *ṛbh-ú-s*, etc. (Lindner, p. 61). Goth. in addition: *tulg-u-s*.

Formations in which a lingual consonant is resolved according to the note on p. 295: βαρ-ύ-ς = Sk. *gur-ú-s*. πολ-ύ-ς = Sk. *pur-ú-s* = Goth. *fil-u*; the ο of πολύς due to the labial initial; cf. λύκος above.

With nasal vowels: δασ-ύ-ς = Lat. *dens-u-s*. ταχ-ύ-ς = Sk. *ták-u-s*; cf. Zend *tañc-ista*. ἐλαχ-ύ-ς = Sk. *ragh-ú-s* = Lat. *le-v-(is)* (for *lenh-u-(is)?*). παχ-ύ-ς = Lat. *ping-u-is* = Sk. *bah-ú-s*; cf. *báṁh-iṣṭa*. Gr. in addition: βαθ-ύ-ς and ἔπαθον; cf. βένθ-ος and πένθ-ος. According to the note on p. 295: ταν-υ (in τανύ-πτερος) = Sk. *tan-ú-s* = Lat. *ten-u-(is)*.

IV. Participles in *tá* and *ná* (Gr. verbals in τό-ς). βλασ-τό-ς = Sk. *vṛd-dhá-s* (Curt. Et. nr. 658). βρο-τό-ς and μορ-τό-ς = Sk. *mṛ-tá-s*. Sk. *pûr-ṇá-s* (= *pṛ-ṇá-s*) = Goth. *ful-l(a)-s* = *ful-n(a)-s*) = Gr. πολ-λο- in πολ-λοί (= πολ-νο-); the labial character of the root-vowel in the last two examples is due to the labial initial. The base πολ-υ- is a different formation; see above. Sk. *dṛṣ-ṭá-s* = Germ. *torh-tá-s*. Sk. *bhṛ-tá-s* and *vṛt-tá-s*; cf. Goth. *baúr-an(a)-s* and *vaúrþ-an(a)-s*. Gr. in addition: δαρ-τός and δρα-τός, καρ-τός, σπαρ-τός, φθαρ-τός, στρα-τός (σταλ-τός); Sk. regularly: *tṛp-tás*, *kḷp-tás*, etc.

Additional Goth. participles in *na: baúrg-a-n(a)-s, taúr-a-n(a)-s, stul-a-n(a)-s*, etc.; further Goth. formations in *ta: þaúrf-t(a)-s, daúrs-t(a)-s, faúrh-t(a)-s*, handu-*vaúrh-t(a)-s* and *skul-d(a)-s;* Lat. *pul-sus, vul-sus* and *sepul-tus.*

With nasal vowels: τα-τό-ς = Sk. *ta-tá-s* = Lat. *ten-tu-s.* βα-τό-ς = Sk. *ga-tá-s* = Lat. *ven-tu-s;* cf. Goth. *gum-a-n(a)-s.* (αὐτό)-μα-το-ς = Sk. *ma-tá-s* = Goth. *mun-d(a)-s;* cf. Lat. *commen-tus.* φα-τό-ς = Sk. *(g)ha-tá-s.* ἐρα-τός = Sk. *ra-tá-s;* cf. Lat. *len-tus?* Gr. in addition: ῥαπ-τός; Sk. *ya-tá-s, na-tá-s, bhraṣ-ṭá-s, sras-tá-s*, etc. Goth. participles in *na: sugg-a-n(a)-s, bund-a-n(a)-s;* in *ta: guma-kun-d(a)-s* (root γεν; cf. γέ-γα-τον).

V. The weak forms of non-thematic presents offer a few examples, but only in Sanskrit. With lingual vowels: *kṛ-dhí, kṛ-tám*, etc. With nasal vowels: the present of the root *han* discussed above.

VI. The *reduplicated*, non-thematic present shows weak forms of the root in the same cases as the simple, non-thematic present, and gives rise to lingual vowels. Sk. *pi-pṛ-más* = Gr. πίμ-πλα-μεν. Gr. πι-φρά-ναι is to be compared with Sk. *bi-bhṛ-más.* Another Sk. form is *pi-pṛg-dhí.*

VII. The inchoative class, when it adds the element σκ (*ch*) directly to the root has the weak form of the root, and gives rise to lingual and nasal vowels. With ling. vowels: *pṛchămi* = Lat. *po(r)-sco.* Another Vedic form: *ṛ-chămi.* With nasal vowels: βά-σκω = Sk. *gá-chāmi.* Another Gr. form: πάσχω = πν̣θ-σκω; another Sk. form is *yá-chāmi.*

VIII. The Sk. presents in *ya* (Hindu IV. class) take the weak form of the root. To this correspond a considerable number of Greek presents with ι (*y*). They produce lingual and nasal vowels: μαίνομαι (= μν̣-yομαι) = Sk. *mán-ye* (= *mṇ-ye*). In the same manner βαίνω, καίνω, τι-ταίνω (for βν̣-yω, etc.); πταίρω, δαίρω, σπαίρω and ἀσπαίρω, βάλλω (for πτρ̣-yω, βλ̣-yω, etc.) Sanskrit in addition: *nṛ́t-yate, tṛ́p-yate*, etc.

IX. Presents in *nu*, νυ (Hindu V. and VIII. classes) exhibit the root in ablaut III and give rise to lingual and nasal vowels. With lingual vowels: πτάρ-νομαι; Sk. *ṛ-ṇó-mi, ṛdh-nó-mi, kṛ-ṇó-mi, vṛ-ṇó-mi, stṛ-ṇó-mi, dhṛṣ-ṇó-mi*, etc. With nasal vowels: τά-νυ-ται (τν̣-νυ-τε) = Sk. *ta-nu-té* (= *tṇ-nu-té*). Gr. ἅ-νυ-ται (=σν̣-νυ-ται) = Sk. *sa-nu-té* (= *sṇ-nu-té*). Sk. in addition: *va-nó-mi, kṣa-ṇó-mi, ma-nv-é*, etc. This removes the obnoxious VIII. class of the Hindus; the present sign is everywhere *nu* (νυ), not *u* (υ); cf. p. 321, and Brugman in Kuhn's Zeitschrift XXIV, p. 288 ff.

X. Greek verbs in *ανω* with and without infixed nasal take the weak form of the root, and therefore exhibit lingual and nasal vowels. (*a*) *ἁμαρτ-άνω*, *κατα-δαρθ-άνω*, *ἀλδ-άνω*, *ἀλφ-άνω* for *δρ̣θ-νω*, etc.; cf. Schmidt, Vocalismus p. 38. (*b*) *πα-ν-θ-άνω*, *λα-γ-χ-άνω*, *χα-ν-δ-άνω* (for *πν̣θ-νω*, etc.) That *α* of the root-syllable is the nasal vowel is proved by *πένθ-ος*,*λέ-λογχ-α* and *χείσομαι* (*χενδ-σομαι*); cf. p. 322. (*c*) A few combine the present sign *ι* (*y*) with the nasal: *μαρ-αίνω*, *τε-τρ-αίνω* and *παθ-αίνω*.

XI. Non-thematic second aorists take the weak form of the root in the cases that usually have the weak form (dual plural active, and entire middle) and give rise to lingual and nasal vowels. Cf. Whitney, Sk. Grammar § 829 ff. With lingual vowels: *ἀπο-ύρα-ς* and *ἀπο-υρά-μενος* (= *ἀπο-Ϝρ̣-ς* and *ἀπο-Ϝρ̣-μενος*); the strong form appears in *ἀπό-(Ϝ)ερσε*. Sanskrit forms: *á-vṛ-ta*, *á-kṛ-ta*, *á-mṛ-ta*, *á-vṛk-ta*, etc. With nasal vowels: *ἀπ-έ-φα-το· ἀπέθανεν* (Hesych.), cf. *πέ-φα-ται*, *ἀπ-έ-κτα-το*, *κτά-μενος*.; cf. Curt. Verb. I² 192. Sk. forms: *á-ma-ta* and *á-ga-ta*; *man* and *gam*.

XII. The thematic second aorist is made with ablaut III and gives rise to lingual and nasal vowels. With lingual vowels: *ἔ-δρακ-ον*=Sk. *á-dṛç-am*. Further Gr. formations: *ἔ-πραθ-ον*, *ἔ-πραδ-ον* and *ἔ-παρδ-ον* (cf. H. Germ. perf. plur. *furz-*), *ἔ-τραφ-ον*, *ἔ-τραπ-ον* (: *τρέπ-ω*), *ἔ-τραπ-ον* (in *τραπ-είο-μεν* : *τέρπ-ω*), *ἔ-ταρπ-ον* (in *ταρπ-ώμεθα* : *τέρπ-ω*), *ἔ-βραχ-ον*, *ἥμαρτ-ον*, *ἔ-δαρθ-ον* and *ἔ-δραθ-ον*, *ἔ-δραπ-ον*. Other Sk. forms: *á-gṛdh-am*, *á-tṛsh-am*, *á-vṛt-am*, etc. Whitney § 847.

The second aorist passive system, a special Greek formation, made under the same conditions as the second aorist active shows: *ἐ-δράκ-ην*, *ἐ-στράφ-ην*, *στραφ-ή-σομαι*, *παρδ-ήσομαι*, *ἐ-τράφ-ην*, *τραφ-ήσομαι*, *ἐ-τράπ-ην*, *ἐ-φθάρ-ην*, *ἐ-τάρπ-ην*, *ἐ-βράχ-ην*, *ἐ-κλάπ-ην*, *ἐ-πλάκ-ην*, *ἐ-λάπ-ην*.

Instances which accord with the note on p. 295: *ἔ-πταρ-ον*; (*ἐ*)-*Ϝάλ-εν*; *ἔ-βαλ-ον*; *ἐ-πάρ-ην*, *ἐ-κάρ-ην*, *ἐ-δάρ-ην*, *ἐ-πτάρ-ην*; *ἐ-Ϝάλ-ην*, *ἐ-στάλ-ην*, *σταλ-ήσομαι*.

With nasal vowels: *ἔ-παθ-ον*, *ἔ-λαχ-ον* (: *λογχ-ή*), *ἔ-χαδ-ον*; *ἔ-ῤῥαφ-ον* : *ῥομφ-εύς*; sec. aor. pass. *ἐ-ῤῥάφ-ην*. Sk. forms: *á-radh-am*, *á-bhraç-am*, *á-sras-am*, *á-math-am*, etc.: *randh-*, *bhrañç-*, *srañs-*, *manth-*, etc.

Instances according to note on p. 295: *ἔ-κταν-ον*, *ἔ-καν-ον*; *ἐ-κάν-ην*; *ἔ-ταμ-ον*, *ἔ-δραμ-ον*.

A reduplicated thematic aorist with *ρ̣-* vowel is *τε-ταρπ-ό-μην*; cf. Vedic *ji-gṛ-tám* (Whitney § 856 f.); with nasal vowel: *á-si-ṣyad-at*: *syánd-ate*.

XIII. The ancient perfect (without κ) was originally a non-thematic formation, which had strong forms of the root in the sing. act.; weak forms in the du. plur. active, all the middle, as also in the participle. In Sk. and Goth. this law appears in the main undisturbed; in Greek it is to a large extent disturbed or wiped out; cf. pp. 318 and 324.

The only examples in which this relation has survived in the active of root, which show the ablaut ε : ο (AA) are: Ϝέ-Ϝοικα : Ϝέ-Ϝικ-τον : πέ-ποιθα : πέ-πισ-θι; πέ-πονθ-α : πε-παθ-υῖα (πε-πν̣θ-υῖα); γέ-γον-α : γέ-γα-μεν; μέ-μον-α : μέ-μα-μεν; δεί-δοι-κα : δεί-δι-μεν; κέ-χλοιδα : δια-κε-χλιδ-ώς and οἶδ-α : ἴδ-μεν. Liquid roots have restricted this differentiation to the middle against the active, and there give rise to liquid vowels: τέ-τραμ-μαι, τέ-θραμ-μαι, ἔ-στραμ-μαι, ε-ἷμαρ-ται and ἔ-μ(β)ρα-ται (Hesych.); ἔ-φθαρ-μαι, ἔ-σπαρ-μαι, δέ-δαρ-μαι, κέ-καρ-μαι, πέ-παρ-μαι; τέ-ταλ-μαι, ἔ-σταλ-μαι. There are numberless Sk. forms: *ca-kr̥ṣ-é*, *ja-bhr̥-ṣé*, *va-vr̥-ṣé* and *cā-kl̥p-ré* are examples. Goth. *ga-daúrs-um*, *vaúrþ-um*, *hulþ-um*, *skul-um*, etc., are perfectly parallel. With nasal vowels: μέ-μα-μεν : μέ-μον-α = Goth. *man : mun-um*; Sk. *ta-tas-ré* = Gothic. (*at*)-*þuns-um*. Further Greek formations: γέ-γα-μεν : γέ-γον-α; πέ-φα-ται : φόν-ος; τέ-τα-μαι : τόν-ος; πε-παθ-υῖα : πέ-πονθ-α.

Sanskrit roots ending in nasals never appear before consonants in the weak forms of the perfect; we have, therefore: *ja-gm-ús*, *ja-ghn-áthus*, *va-vn-é*, etc. Roots with medial nasal show the nasal vowel (*a*): *ta-stabh-ús*, *ca-krad-é*, *rā-radh-ús*, etc. (for *ta-stṃbh-ús*, etc.). Goth. is very rich in this kind of formation; eighteen verbs of the first ablaut class show it: *bund-um*, *stugg-un*, etc. So also the preterite presents: *kun-num*, *mun-um*.

The preceding enumeration is restricted to cases of liquid and nasal vowels in radical syllables, and for these will be found approximately complete. Liquids and nasals receive the same treatment in inflectional elements, but these concern the subject treated here but indirectly. A few examples will suffice: Gr. πατρά-σι, μητρά-σι = Sk. *pitŕ̥-ṣu*, *mātŕ̥-ṣu* (liquid vowels between two consonants); πατρ-ός, *pitr-ā* (liquid consonant before a vowel); the Ionic perf. and pluperf. endings αται and ατο in τε-τεύχ-αται, ἐ-στάλ-ατο, ἐφθάρ-ατο, etc., are the same as those which appear in λέ-λυ-νται, ἐ-λέ-λυ-ντο, etc.; the nasal has been vocalized between two consonants. The same difference appears in Sk. *jú-hv-ati : bháv-a-nti*, etc.

The extent to which Greek α *and Sanskrit* a *do not represent Indo-European* a *is therefore very considerable. In Greek the great mass of* α*'s that appear in the vicinity of liquids and nasals* *are but defective (or rather excessive) graphic representations of the weakest imaginable vocalic element (sh'va).*

The discovery of the preceding facts was soon employed as the entering wedge for a series of attacks upon I. E. *a*, which have by this time resulted in a very serious curtailment of it, and by consequence in an almost totally changed system of Indo-European vowels. The first step was here again taken by Brugman (Curtius' Studien IX 367 ff, Kuhn's Zeitschrift XXIV 1 ff), successful at least in that it pointed the right way for further examination. He there assumes for Greek ε, ο, α three different I. E. sounds, which he indicates by a^1, a^2 and a^3; a^3 he regards as an original short *a*, which appears in Europe as *a;* in Sk. sometimes as *a*, sometimes as *i* (examples: Gr. στα-τό-ς, Lat. *sta-tu-s*, Sk. *sthi-tá-s);* a^1 corresponds to European and Armenian *e* and Sk. Zend *a;* a^2 corresponds to Greek, Italic, Celtic and Slavic *o*, German and Lithuanian *a*, also to Sk. *a* in a closed syllable; but in an open syllable, in cases represented by *bhár-ā-mas* (φέρ-ο-μεν), *pā́d-am* (πόδ-α), *dātā́r-am* (δώτορ-α), *ushā́s-am* (ἠό-α), *jānu* (γόνυ), *dā́ru* (δόρυ), a^2 is, according to Brugman, represented by Sk. *ā*. That, however, the lengthening of the *ā* in these cases is accidental or owing to special Sanskrit laws, was shown (in the main successfully) by Collitz (Bezzenberger's Beiträge II 291 ff) and J. Schmidt (Kuhn's Zeitschrift XXV 2 ff). Aside from this, Brugman had intuitively seen the truth, though the more concrete proofs of his system came from a totally different direction, as will be shown in the next section. It will be seen that European and Armenian *e*'s were *e* from all time; that the Sanskrit and Iranian *a*, which correspond to it, are either special deviations dating from a comparatively late period in the coexistence of these languages; or, what is even more probable, that this *a* in these languages is but an insufficient sign for a sound which would be best indicated by *ae* (a^e); as yet there has been no proof that the Sanskrit *a* which corresponds to Greek ο is a sound which is colored by *o* (a^o): it is enough to know that the Greek ablaut ε : ο exists in every language of the family. That the masters of comparative philology should have allowed themselves for so many years to believe that a language, when still in its living condition, could have possessed the sound *a* and the sounds *i* and *u*, skipping the intermediate positions *e* and *o*, is one of those mistakes which is wellnigh incomprehensible. This has at last been definitely overthrown with the aid of results gathered from special studies on the Sanskrit palatals, and to a lesser extent from the study of the Greek dentals of Curtius' dentalism.

III.

The fact that the I. E. languages have two series of guttural consonants was discovered and settled by Ascoli, and has become one of the best known laws of I. E. phonetics. They are generally differentiated by the designations k^1, g^1, gh^1 and k^2, g^2, gh^2 for the common I. E. period. In Sanskrit the first series is left in part as *k, g, gh* (Zend *k, g*); it also appears palatalized as *c, j, h* (Zend *c* and *sh, j* and *zh*). In Greek this series appears partly as ϰ, γ, χ, partly as π, β, φ; these latter interchange in a few instances with τ, δ, θ under circumstances which are in principle the same as those in which Sk. *k, g, gh* interchange with *c, j* and *h*. The second I. E. series k^2, g^2, gh^2 shows in Sanskrit a sign devoted solely to itself only for k^2, namely *ç*; while the sounds g^2 and gh^2 share the signs *j* and *h* with the palatals of the series *k, g, gh*. In Zend k^2 is *ç*, g^2 and gh^2 are *z*. In Greek k^2, g^2 and gh^2 appear regularly as gutturals: ϰ, γ, χ. The following scheme will illustrate the subject:

INDO-EUROPEAN.	SANSKRIT.	ZEND.
k^1, g^1, gh^1	*k, g, gh*	*k (kh), g (gh)*
k^2, g^2, gh^2	*c* *ç* } *j, jh*	*c (sh), j (zh)*

INDO-EUROPEAN.	GREEK.	
k^1, g^1, gh^1	ϰ, γ, χ	π, β, φ τ, δ, θ
k^2, g^2, gh^2	ϰ, γ, χ	

It is the palatal series which has branched off from the first guttural series: Sk. *c, j, h;* Zd. *c, j;* Gr. τ, δ, θ, which concerns the subject here treated. The true cause of this division remained unrecognized up to the time of Ascoli; he was the first to get some inkling of the way to a legitimate explanation. In *corsi di fonologia*, p. 42, note, he states that in Zend the change from a guttural to a palatal in the three degrees of the adjective *aka-*, *ashyô* and *acista-* [*k: c (sh)*] is due to the change of the vowel following the guttural, and also notes that there is no root of the form *gi* either in Sanskrit or Zend, but that they show *ji*. This is really a recognition, fragmentary as it may be, of the principle that palatalization is due to the influence of palatal vowels actually occurring after gutturals. Hübschmann in his celebrated article (Kuhn's Zeitschrift XXIII

384 ff), in which he so finely separates the two series of gutturals for Zend and Sanskrit, is still content to set forth merely the empirical fact that original *ki* and *gi* become *ci* and *ji* in Sanskrit and Zend. Fick also (Die ehemalige Spracheinheit der Indo-germanen Europas, p. 1 ff) simply states that the Sanskrit guttural and palatal series, which correspond to I. E. k^1, g^1, gh^1, are constantly interchanging with one another. According to J. Schmidt (K. Z. XXIII, p. 63), Dr. Vilhelm Thomsen of Copenhagen was the first to hint that the *European* languages, with their supposed secondary vocalization, might be drawn in as auxiliaries in such a way that Sanskrit and Zend syllables *ca* and *ka* should be explained from κε and κα as European equivalents, and that thus the palatals before a written *a* owe their origin to the fact that this *a* was in such connections originally sounded as *ae* (a^e). The full principle was recognized, as it seems, nearly simultaneously by Collitz (Bezz. Beiträge III 177 ff), Karl Verner, who did not publish it, De Saussure (Mémoires de la societé de linguistique de Paris III 369) and by Joh. Schmidt, who published it last (K. Z. XXV 63 ff), working through the entire material in the Rig Veda and Avesta, and explaining the considerable quantity of exceptions which would naturally grow up as soon as the palatals had fairly taken position as members of the Indo-Iranian alphabets and the clear consciousness of their origin had been lost.

If we formulate the principles which are laid down in these treatises, there result the following rules:

1. The Indo-Iranian palatals Sk. *c*, *j*, *h*; Zend *c* (*sh*), *j* (*zh*) are a modification of the first guttural series (k^1, g^1, gh^1,) before palatal vowels; *i* (*y*), a^e ($a^e i$, $a^e u$) and can originally have stood only before these vowels.

2. The vowel signs *a*, *ai* and *au* in the Indo-Iranian languages actually represent two series of vowels at least (more if more can be proved), namely, a^e, $a^e i$, $a^e u$ and *a*, *ai*, *au*, the former corresponding to *e*, *ei*, *eu* (Gr. ε, ει, ευ) in the European languages.

The last rule bears upon the correct understanding of Greek ablaut in three vital points.

(a) In the ablaut series

I.	πετ	στελ	περθ	πενθ	ρευ (ρεϜ)	πειθ,	etc.
II.	ποτ	στολ	πορθ	πονθ	ρου (ροϜ)	ποιθ,	etc.
III.	πτ	σταλ	πραθ	παθ	ρυ	πιθ,	etc.

the ε which appears in the row marked I (ablaut I) is not the result of the weakening of I. E. *a*, but represents an original sound, which is clearly expressed in the European branches of the family, and which is not expressed by a distinct sign in the Indo-Aryan languages, but there manifests itself in the palatals of the Indo-European series k^1, g^1, gh^1, namely *c*, *j*, *h*.

(b) Again looking at the series of roots laid down under (a) it will appear that all the forms under I are on the same level as far as the root vowel is concerned, so also the forms under II; from necessity the forms under III are also on a level; one of these holds the same grammatical position as the other; one is used in the same kinds of formations, verbal and nominal, as the other.

(c) The sound α appears in III only in connection with linguals and nasals; it is something special. What it is has been sufficiently described above. The old theory which regarded this α as the residue of I. E. *a* falls to the ground; it is a special Greek feature, as the Gothic will show for further evidence.

While the rows I and II have perfectly unvarying root vowels in Gothic, row III is there also irregular in connection with linguals and nasals, showing vowels peculiar to itself, which, like Greek α, are special methods for rendering lingual and nasal vowels:

I.	*lig*	*vairþ*	*stil*	*min*	*bind*	*steig*	*kius*,	etc.
II.	*lag*	*varþ*	*stal*	*man*	*band*	*staig*	*kaus*,	etc.
III.	(*lg*)	*vaúrþ*	*stul*	*mun*	*bund*	*stig*	*kus*,	etc.

Here the roots containing linguals and nasals show an utter deviation in form under row III from the corresponding roots in Greek under row III, while the forms under I and II answer to the Greek forms throughout.

It will not be necessary to present proofs for the origin of palatalization and the Sanskrit sound a^e. Those who wish to see the full exposition of these most interesting facts will be repaid by studying J. Schmidt's treatise (close reading though it be) in K. Z. XXV 1. A few salient examples in illustration will, however, not be amiss. These will be chosen from such as show the variation between guttural and palatal in the same root:

Variation between *k* and *c*: Sk. *çuk-rá-s*: *çóc-iṣṭa-s*; *çak-rá-s*: *çác-iṣṭa-s*; Zend *aka-*: *acista-*; Sk. *ark-á-s*: *arc-í-s*; *ká-tara-s* (πό-τερο-ς): *ca* (τε); *vāk-á-s*: *vác-as* (theme ἔπ-ες = *va*^{e}*c-a*^{e}*s*), etc.

Variation between *g* and *j*: *ug-rá-s*: *ój-īya-s*; *tig-má-s*: *téj-iṣṭa-s*; *yúg-van*: *yój-as* (theme ζευγ-ες; Sk. *ya*^{e}*uj-a*^{e}*s*); *tyag-á-s*: *tyáj-as*, etc.

Variation between *gh* and *h*: *mágh-avan*: *máṁh-īyaṁs*, *ghar-má-s*

(Lat. *formus*): *hár-as* (theme θερ-ες, *ha^{e}r-a^{e}s*), *ghan-á-s* (φόν-ος): *hán-mi* (*ha^{e}n-mi*; cf. θείνω) etc.

The facts and principles illustrated by these examples for the Indo-Iranian languages are represented in Greek also. The variation takes place here between *labials* (which represent original gutturals) and the *dentals* of Curtius' dentalism, which take the place of palatals. Not indeed in so widely diffused a manner has the original difference between the labials (= gutturals) and dentals (= palatals) been held fast; it has been wiped out very largely at the expense of the palatals; but there are still enough data left to show that the Greek started with the same differences, and that these differences were based upon the same cause: the character of the following sound. As in Sk. a palatal before *i* (*y*), *a^e* (*a^{e}i*, *a^{e}u*) corresponds to a guttural before other sounds, so in Greek there is still a respectable body of forms which show dentals before ι and ε (ει, ευ), which vary with labials according to the proportion:

τ, δ, θ : π, β, φ = Sk. *c*, *j*, *h* : *k*, *g*, *gh*.

Greek palatalization appears in the following cases: 1. τίς, gen. τε(σ)ο, τε : πό-τερος = Zd. *cis*, *cahyā*, *ca* : Sk. *ka-tarás*. 2. πέντ-ε : πέμπ-τος = Sk. *páñc-a* : *paṅk-tí-s*. 3. τρι-οττίς (Curt. Et^5. p. 464), ὄσσε, ὄσσομαι : ὄψομαι. 4. τέτορες, τέσσαρες : (π)τρά-πεζα = *catvā́r-as* : (*k*)*turī́ya-s*. 5. πέσσω : πεπ-τός = *pac-yáte* : *pak-tá-s*. 6. νίζω (νιδ-γω) : νίψω = *nij-yáte* : *nik-tás*. 7. Aeolic ὀδελός : ὀβολός.

Of special interest are the following additional cases, because they furnish a valuable quantity of material for the ablaut.

8. The group of words treated by Curtius under nr. 649, τί-ω, τεί-ω, τί-νω, etc., was long ago identified with Sk. Zend group *ci-nó-mi*, *ci-tás*, Zd. *kaē-na* ('revenge'). This last is perfectly identical with ποι-νή. The initial consonant of ποι-νή is now perfectly clear. Both τεί-ω and ποι-νή go back to the tenuis of the I. E. guttural row: *k*, *g*, *gh*, which is regularly represented by τ before a palatal vowel, but by π before a non-palatal:

τεί-ω : ποι-νή = Sk. *cáy-ate* : Zd. *kaē-na* =
τε : πό-τερος = Sk. *ca* : Sk. *ka-tará-s*

The functional kinship of the words appears in the phrases ἀπετίσατο ποινήν, Od. ψ 312, ποινήν τίσοντες, Hdt. III 14.

9. It has been lately recognized (K. Z. XXV 138) that the roots which occur in the two Homeric phrases περιπλομένων ἐνιαυτῶν and περιτελλομένων ἐνιαυτῶν belong together in the same way as ποι-νή and τεί-ω. Regularly they should complement one another in such a way that only those forms in which the root-vowel was ε

should have τ as initial consonant, while all the others should have π. This relation is, however, not perfectly preserved. There occur τέλλω, ἀνατέλλω, etc., against πόλος, ἀμφίπολος, -πλόμενος; but there is also ἀνατολή and πέλομαι, forms which must have been made at a later period, when the cause which had set τέλλω against πόλος had ceased to operate.

τέλλω : πόλος, -πλόμενος = τείω : ποινή.

10. The group of words whose present is βάλλω started with the same variableness of the initial consonant, according to the color of the root-vowel, as the preceding groups. This relation is still preserved to a considerable extent. Arkadian ζέλλω, Tegeatic ἐσ-δέλλω are to βολ-ή, βεβόλημαι, ἔβαλον (= ἔ-βλ-ον), βάλλω (= βλ̣-yω) as περι-τελλόμενος : περιπλόμενος. Initial δ(ζ) and β are the variations of I. E. *g* according to the vowel which follows, in the same way as τ and π are the variations of I. E. *k*. In this group, however, there are also forms which must have been made later than the period of the working of this law; for there are βέλος, βελόνη, where the consistent carrying out of the law would require δέλος, etc. There is no cause for surprise or doubt about this, as the principle has in general ceased to live even in the earliest records of the language which have survived.

11. Perfectly preserved is the variation of the initial consonant in the following group of words: ϑεί-νω (θεν-yω) : γόν-ος, ἔ-πε-φν-ον, πέ-φα-ται, ἀπ-έ-φα-το, φα-τός. Excepting the word φέννος· θάνατος (Hesych.) which shows the labial where a dental should be expected, the entire group of words is regular in having θ before ε and φ before other sounds; in the same way as the Sk. root *han* has preserved the relation in *hán-mi : ghn-ánti*. θείνω : φόν-ος, ἔ-πε-φνον = *han-mi : ghan-ás, ghn-ánti*.

12. The same law must once have been at work in the root to which θέρ-ος belongs. This is sound for sound Sk. *hár-as* (theme $ha^{e}r\text{-}a^{e}s$), 'heat, flame'; therefore it goes back to I. E. gh^1, as *hár-as* has a palatal initial varying with *ghar-má-s* (guttural initial) before an *a* which had no palatal quality. So testify Lat. *formus* = Goth. *var-m(a)-s* in *varm-jan* = Sk. *ghar-má-s*. A Greek form corresponding to these would be φορ-μο-ς = Lat. *formus*. Such a form does not occur; instead of it, however, θερ-μό-ς, where the process of assimilation is clear, not only from the corresponding words in the kindred languages, but from the Greek itself, as formations with suffix -μος, μη take ablaut II (ο); so ἀλοι-μός, χορ-μός, πότ-μος, ὅρ-μος, δοχ-μή, τόλ-μη, etc.; cf. p. 319.

The facts recounted in this section show abundantly that the vocalism of the Greek has the largest claim to being a correct, undisturbed reflex of that of the corresponding roots in all the languages of the family. Sanskrit, Zend in reality possess the root-triad (*πετ, ποτ, πτ; λειπ, λοιπ, λιπ*) to even a larger extent than the Greek; but the first two ablauts have fallen together, at least graphically. What evidence the palatals offer has been shown. It would seem, too, that what Whitney (Sk. Gr. § 21) says of the pronunciation of Sk. *a* as explained by Pāṇini and the Prātiçākhyas is evidence which should be carefully applied in the same direction. Sk. *a* has for twenty or twenty-five centuries been pronounced as the vowels in '*son*,' '*but*,' etc. Is it not probable that the starting-point of such a pronunciation, which is of course to a large extent secondary and transferred, must be looked for in short vowels historically different from *a* (as pronounced in Germ. '*gab*,' '*land*,' etc.)?

Surprising is the non-sensitiveness of the Latin to variations of root-vowels, especially if its otherwise close kinship with Greek is kept in view. It everywhere evinces the tendency to urge some one of the root-vowels through the entire group of formations belonging to the root. To a large extent this is the vowel of the root-form (abl. I). So the vowel of *lego*, *clepo*, *tremo*, *pe(r)do*, *serpo*, etc., fails to vary with abl. II (*o*) in the perfect. On the other hand the I. E. perfect vowel (abl. II) is contained in *to-tond-i*, *spo-pond-i* and *mo-mord-i;* but the radical vowels of these words have spread over their entire respective word-groups, either assimilating the vowel, or suppressing forms which show another root-vowel, and placing such as had *o* in their place. Such are the presents of these words: *tond-eo*, *spond-eo*, *mord-eo*, which legitimately show *o*, but are in reality causative formations, such as Gr. *φορ-έω* to *φέρω*, Goth. *lag-jan : ligan;* see p. 319. The weakest root-form (abl. III) is retained to the exclusion of the other two in the groups of which *sci-n-d-o*, *fi-n-d-o*, *ju-n-g-o* are presents, e. g. *jungo*, *junxi*, *junctus*, *jugum*, *conjux*, etc. Still enough has been left of a Latin ablaut to show that it once coincided with the Greek, though there is no one case in which all three forms have been preserved.[1] Examples of roots which show the first and second forms of the root are: *nex : noc-eo; teg-o : tog-a; sequi : soc-ius;* of groups which show abl. I and III: *fer-o : for-(ti)-s* = Sanskrit *bhṛ-tí-s* (see p. 296); *dīc-o* (= *deic-o*): *causi-dĭc-us; dūc-o* (= *deuc-o*): *dŭc-em; ūr-o* (= *eus-o*) : *ŭs-tus;* of groups which show abl. II and III: *mon-eo : men-(ti)-s* = Sk. *ma-tí-s*. Cf. Schleicher Comp³. §§ 45–50.

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[1] *fīd-o* (= *feid-o*) : *foed-us* (= *foid-us*) : *fid-ēs* = *πείθ-ω* : *πέ-ποιθ-α* : *πισ-τός* would seem to be a remnant of full ablaut in Latin; but this is rendered very doubtful from the fact that bases in *-es* (*foedus*, *foed-er-is*) are almost without exception formed with ablaut I: *μέν-ος*, *τεῖχ-ος*, *γλεῦκ-ος*; Sk. *hdr-as*; Lat. *genus*, *nemus*, etc. See p. 316.

The Gothic for the question which concerns us here represents the German family almost perfectly, and is at one with the Greek throughout. The presents *lig-a, taír-a, vaírþ-a, stil-a, steig-a*, etc., go back to common German bases: *lĕg-a, vĕrþ-a, stĕl-a*, etc.; *a* of the perfect ablaut (*lag, varþ*, etc.), is the Greek ο of the perfect ablaut; that the weak form of the root (abl. III) must be referred to a common starting-point with the Greek was shown on p. 303; see also p. 320 ff.

It has been seen that the triple form of the root is not an accidental modification on European ground of a *simplex* primitive form, but that it belongs to our family of languages as a whole; that it is Indo-European. Entirely aside from this proof, however, the variation of the root-vowels in a single language is attended by facts which show conclusively that the phenomenon is of deeper significance than has hitherto been ascribed to it. If this variation were merely one belonging to the Greek alone, even then it would deserve much more serious treatment than is devoted to it, e. g. by Curtius in the seventh section of the first book of his etymology. All he offers there does not elevate the variation between the root vowels above the condition of being an accidental, arbitrary one, one that the language shows capriciously here and there, perhaps as an aesthetic expedient to avoid monotony. So accidental is this variation, in his opinion, that when the question arises which one in the couplets στελ, σταλ and βαλ, βελ is best entitled to the name of root, he gives the preference to the one which occurs in the larger quantity of formations, in the one case to στελ, in the other to βαλ; allowing the form σταλ in the one case and βελ in the other the title of a supplementary root. Totally different is the true state of things. It is a fact, which has until lately not been sufficiently emphasized, and which will be exhibited below in full (p. 313 ff) *that each one of the three root-forms is restricted to a certain number of formations, nominal and verbal;* this fact alone, if reflected on consistently, is enough to establish the root-triad as Indo-European. If the root-vowel of a formation like *ján-as* (γέν-ος) is the same as in a formation like *ghan-á-s* (φόν-ο-ς), why is the root-vowel of the formation to which *ján-as* belongs regularly represented by ε (γέν-ος, ἔπ-ος, κλέϝ-ος); that of *ghan-á-s* regularly by ο: φόν-ο-ς, τόκ-ο-ς, στοῖχ-ος, ῥόϝ-ος, etc.? If ε and ο are merely the single I. E. *a* discolored or weakened in a common European period, whence the regularity in the modification? What two new and different forces, the one restricted in its workings to the groups of which γένος, γεν-έ-τωρ, φέρ-ω, etc. (p. 314 ff), are specimens, the other to the groups of which φόν-ος, γέ-γον-α, φορ-έω, etc., are specimens (p. 318 ff), could thus anew engraft themselves upon formations which had been fixed long before, so as to reconstruct them systematically and consistently? An irregular modification of a vowel here and there in the progress of phonetic decay can affect old types of words, but they cannot be recast after a new plan. That would be a retrograde movement, which "language can execute no more than a river can flow back to its source."

IV.

A closer look at the physiological construction of the roots which show the variation between ε and ο (Class AA) yields the following results: These roots have in their strong forms, as purely vocalic element, this ε varying with ο and nothing else. The remaining elements have never the character of pure vowels, but are either full consonants or semiconsonants, or both. Of the first category there is but one type, that exhibited in roots like πετ, ἐς, etc.; the root vowel is preceded and followed by a consonant (spiritus lenis in ἐς, ἐδ, etc.). This we name type A. The rest arrange themselves best according to the following scheme: Type B: Those which end in a semiconsonant; Type C: Those which contain a semiconsonant preceded and followed by other consonants:

A.	B.	C.
πετ, ποτ	δε(*y*), δοι	λειπ, λοιπ
ἐδ, (ὀδ) in	χευ, χο(ϝ)	ἐλευθ, ἐλουθ
the Goth. perfect	δερ, δορ	δερκ, δορκ
at, etc.	στελ, στολ	κλεπ, κλοπ
	μεν, μον	πενθ, πονθ
	τεμ, τομ	ῥεμφ, ῥομφ
	etc.	etc.

This classification has especial value for understanding ablaut III, the weakest, the accentless form of the root. This differs from the two strong ones in no particular, except that it does not possess the purely vocalic element (ε or ο) which appears in the strong forms. The root forms which lie at the base of ablaut III are, therefore:

A.	B.	C.
πτ	δι	λιπ
σ	χυ	ἐλυθ
etc.	δρ	δρκ
	στλ	κλπ
	μν	πνθ
	τμ, etc.	ρμφ, etc.

It is evident that some of these last groups are unpronounceable in certain connections; e.g. according to type A we have ἔ-σχ-ον, the second aor., which legitimately shows the weakest form; so also ἐκ-τός for σχ-τός, the verbal adjective is made from the same degree of the root (cf. ἔ-πιθ-ον and πισ-τός); but the difficult group of consonants σχτ- necessitated the insertion of a short vowel;[1] it is not to be supposed, however, that the ε in ἐκ-τός possessed in speaking the same value as that of ἔχ-ω, as long as the position of the accent was not disregarded in pronunciation. In weak forms of the types στλ, δρκ, πνθ, ρμφ, etc., the lingual and nasal consonants were changed to lingual and nasal vowels; λ when vocalized appears as αλ, λα; ρ as αρ, ρα; ν and μ appear as α, αν and α (αμ); cf. p. 295.

It has appeared sufficiently that the assumption of a root λιπ or φυγ by the side of πετ is inconsistent, because the two root forms have totally different functions in their respective groups of words; the above schemes will furnish a purely physiological reason. Roots which contain an ι or υ are never followed by another semi-consonant (ρ, λ, μ, ν); there are no roots of a type μιν, διρ, πινθ, διρκ, etc., as there are μεν, δερ, πενθ, δερκ, etc. Nasals do, indeed, occur after ι and υ in certain formations, generally the present, as πυ-ν-θ-άνομαι, Lat. *sci-n-d-o*, etc.; but a look at some other formation from the same root will quickly teach that the nasal does not belong to the root (πεύ(θ)-σ-ομαι, Sk. *chi-chéd-a*); on the other hand, when a nasal or lingual is preceded by ε it belongs to the root, and appears, or must be accounted for, in all formations; so πένθ-ος, πέ-πονθ-α, πείσο-μαι (= πενθ-σομαι), Sk. *ta-sthámb-a*, *ba-bándh-a*, etc.[2] The morphological function of nasals and linguals, which belong to the root, is therefore precisely the same as that of *ι* (*y*) *υ* (*ϝ*) belonging to the root; both waver between a vocalic and consonantal condition according to their surroundings; both are totally different from the *ε* and *ο* which appear in the root; these are the root vowels proper, and about these the semiconsonantal and consonantal elements of the root are grouped.

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[1] Cf. the other device for producing the same effect: σχ-ε-τός.

[2] In Lat. *jungo, junxi, junctus*, the nasal is carried through the verbal conjugation; but *jugum*, *conjux*, Gr. ζεύγνυμι, Sk. *yu-yóg-a*, etc., prove that this is owing to illegitimate transfer of the nasal from the present.

The triple root (Class AA) runs through nearly 250 groups of Greek words, is preponderant in Teutonic and Sanskrit, and is really the phenomenon from a discussion of which any treatise on ablaut must start. It is not, however, the only kind of root which appears either in Greek or in the kindred languages; there are considerable numbers of roots which show but two forms, differing from one another merely in the quantity of the root vowel, Class BB, and that in such a way that the form with the long vowel occurs in precisely those formations in which Class AA shows the forms with *ε* and *ο*; the form with the short vowel occurs in those formations in which Class AA shows the weak form (abl. III), as the following scheme will show:

	I.	II.	III.
AA.	*πείθ-ω, τεῖχ-ος* *φεύγ-ω, ζεῦγ-ος* *μέν-ω, μέν-ος*	*πέ-ποιθ-α* *ἐλ-ήλουθ-α* *μέ-μον-α*	*ἐ-πέ-πιθ-μεν, πισ-τός* *ἐλ-ήλυθ-μεν, φυκ-τός* *μέ-μα-μεν, -μα-τος*
BB.	*λᾱ́θ-ω, λᾶθ-ος* *ἵ-στη-μι, στή-μων* *τί-θη-μι, θή-μων* *δί-δω-μι, δώ-τωρ*	*λέ-λᾱθ-α* *ἕ-στη-κα* *ἔ-θη-κα* *δέ-δω-κα*	*λέ-λασ-μαι, -λασ-τος* *ἕ-στᾰ-μεν, στᾰ-τός* *τέ-θε-μαι, θε-τός* *δέ-δο-μαι, δο-τός*

The Gothic has the ablaut corresponding to *λᾱθ* : *λᾰθ* in its third class of ablaut verbs: *fôr : far; ôl : al; frôþ : frăþ*, etc.; the Latin exhibits ablaut consisting in variation between long and short vowels in *scāb-i: scăb-o; fōd-i: fŏd-io; ōd-i: ŏd-ium*, etc. Sanskrit has not often kept this kind of formation undisturbed; it appears in *ça-çā́d-a: çā-çăd-ús; á-sthā-t: sthi-tá-s*, etc.

The question now fairly presents itself: What are the causes of these phenomena which penetrate the vocalism of our languages with such far-reaching regularity; what is the cause that sets *δέ-δο-μαι* against *δέ-δω-κα*; *φυκ-τός* against *φεύγ-ω*; *πείθ-ω* against *πέ-ποιθ-α*, and both against *πισ-τός*? The question naturally falls into two distinct parts: (1) What is the relation, in both AA and BB of the scheme above, of the forms in column III to those in columns I and II? (2) In class AA what causes the difference in the root-vowels of columns I and II?

Surprising as it may seem, this *latter* question remains as yet unanswered. In spite of the large extent of the material which is accessible, there has not been found anything upon which an explanation of the ablaut ε : ο can be rested with safety. That it is not accidental and inorganic, as it was formerly regarded, is clear from the regularity of its distribution, and not the less clear because the reason of it has not been as yet discovered. It is to be noted that it is not restricted to the *root* of words; it occurs as well in formative elements: ἔχ-ε-τε : Lat. *veh-i-te* : Goth. *vig-i-þ* = ἔχ-ο-ντι (ἔχ-ουσι) : Lat. *veh-u-nt* (Old Lat. *veh-o-nt.* Schleicher Comp. 667): Goth. *vig-a-nd*, exhibit the same ablaut ε : ο in the vocalic element, which forms the present theme from the root. In ἵππο-ς : Voc. ἵππ-ε; Old Lat. *equ-o-s : equ-e*, the same ablaut appears in the nominal theme, as its surroundings vary.

Very different is the state of our knowledge with regard to the *former* question. The cause, whose workings we see in the difference between πισ-τός, and πείθ-ω and πέ-ποιθ-α, is perfectly well known. It is the varying position of the accent which creates the difference between strong and weak forms. The languages which have preserved this ablaut best, have fortunately also with it preserved a sufficient amount of data for its explanation.

The Vedic texts which are accented show that, as a rule, the strong form of the root occurs when the tone rests on the root; the weak form, when the tone rests on inflectional elements; so *é-mi* (*a*^{e}*i-mi*) *: i-más; da-dárç-a : da-dṛç-ús; vác-as : uk-tá-s*, etc., etc.

The Greek originally possessed the law of accentuation indicated by these examples to much the same extent as the old Aryan language of India. But in the historical period of the language a new principle, the recessive accentuation, has usurped its place, leaving but a few fossilized remnants of the old method. In θρασ-ύς, πισ-τός, λε-λασ-μένος, λιπ-έ-σθαι, etc., we have survivals of the older accentuation, accompanied by the weak form of the root; generally the accent has been subjected to the new law, usually however without disturbing the form of the root which had accompanied the old accent. So ἴ-μεν, πέ-φα-ται, ἔ-φθαρ-μαι, χάρ-σις were once oxytone, for they contain the weakest form of their roots: ι, φα (φν̣), φθαρ (φθρ̣), χαρ (χρ̣).

The German shows the traces of the old tone system in two ways:

(1) In the ablaut. This coincides in its leading traits with the ablaut of the Greek and Vedic. The two strong forms (abl. I and II) as *steig* and *staig*, *bind* and *band*, occur in those formations in which Vedic words present the strong form of the root accompanied by the accent; the weak forms of the root as *stig*, *bund* (= *bṇd*) in those in which the Vedic shows weak forms, and the accent on a formative element.

(2) An exception to the first German rotation of mutes (*Grimm's Law*) is due to this method of accentuation. In a considerable number of cases I. E. surd mutes do not, as the law demands, appear in the Germanic languages as *surd spirants*, but as *sonant spirants;* this irregularity takes place only in the middle of a word between two sonants. So Goth. *sag-jan :* Old Lat. *in-sec-e* (= Gr. ἔν-νεπ-ε for ἐν-σεπ-ε); Goth. *andi-laus :* Sk. *ánta-s;* Goth. *sibun :* Gr. ἑπτά. The irregular Teutonic sound to a considerable extent alternates with the regular one in inflected words belonging to the same root ('*grammatischer wechsel*'); so in Goth. *tig-u : taíh-un* (δέϰα); *frod-ei(n) : fraþ-jan; laib-a : af-lifnan.* In the inflection of verbs the Germanic languages, with the exception of Gothic, show this alternation in such a way that the irregular sound appears in precisely those forms which contain the weakest form of the root (abl. III); while the regular consonant appears in the two strong forms of the root (abl. I and II). So O. H. G. *zig-um* and *zig-a-n* (perf. plur. and pass. participle): *zêh* and *zîh-an* (perf. sing. and infinitive); Ags. *vurd-on* and *vord-e-n : vearð* and *veorð-an.* This differentiation is carried out also in roots ending in *s*, in such a way that *z* and *r* (sonants corresponding to *s*) occur where the sonant mutes *g*, *d*, *b* occur; *s* itself where the surd spirants *h*, þ, *f* occur. So O. H. G.—

kur-um and *kor-a-n* : *kios-a* and *kōs* =
zig-um and *zig-a-n* : *zīh-a* and *zēh*

The entire phenomenon lives to-day in High German in such changes as *ziehe : gezogen; kiese : erkoren;* Engl. *lose : forlorn;* the cause of it was discovered by Karl Verner (K. Z. XXIII 97 ff). He saw that there was a living remnant of Vedic and I. E. accentuation preserved in this alternation of consonants. *The forms with irregular consonant and weakest root-form* (abl. III) *originally had the tone on their inflectional elements* (: zig-úm *and* zig-a-ná) *in I. E. times, and have it in the accented Vedic texts which have come down to us* (*e. g.* bi-bhid-imá *and* bhin-ná); *the forms with* *regular consonant were accented on the root* (zî́h-a *and* zếh); *Ved.* bhár-ā-mi *and* ja-bhā́r-a. A full discussion can be found in the treatise of Verner; a short mention of it here is not out of place. Verner's law formed one of the most important factors in establishing the truth that the broad facts of Vedic accentuation once ruled in all I. E. languages; it is the strongest justification of the method of accounting for variations of root-vowels which is now universally practised; in fact it has been seen that, so far, ablaut, wherever it is explainable, is so on the basis of this law of accent; wherever this fails there is as yet no other known fact or principle which furnishes additional light; explanation must be held in abeyance until further investigation or new material shows the way.

V.

The three root-forms which have been treated under the names of ablaut I, II and III each occur regularly in Greek, as in the other languages of the family, only in certain kinds of formations, or, conversely, a certain Greek word has but one historically correct root-form or ablaut (cf. above p. 310). But as in language everywhere, so especially in a language of the rich, independent life of the Greek, disturbing forces have operated against the laws which originally shaped the several word formations, and have in certain cases succeeded in almost obliterating the effects of these laws. The unfriendly forces at work are best defined as: 1. *Assimilation* by what is generally termed 'false analogy' or form-association. 2. *New formation* upon some already existing form, or upon the material abstracted from such a form. A single example to illustrate each will not be amiss.

(1) The noun bases in *ες*, generally serving as abstracts (*θέρ-ος*, *κλέϝ-ος*, etc.), are made with ablaut I. According to this rule are made *βένθ-ος* and *πένθ-ος*, both occurring in Homer, but going out of common use about the time of Herodotus. In the later language there appear in addition to these *πάθ-ος* and *βάθ-ος*, illegitimately made with ablaut III. These are evidently formed after the analogy of *βαθ-ύς*, *ἔ-παθ-ον*, etc., forms which regularly have ablaut III, and with which the abstracts were associated in the minds of the language-users until they crowded out the historically correct *βένθ-ος* and *πένθ-ος*, because there were no forms by mental association with which they could be kept alive.

(2) The present *ῥάπ-τω* is made with ablaut III. Ordinarily the theme of the present stands in no formal relation with the themes

of the other tenses, e. g. the present πάσχω is made with ablaut III (see p. 321), but future πείσομαι (πενθ-σομαι) with ablaut I, as the future regularly is. But the future and sigmatic aorist corresponding to ῥάπτω are made according to its root-vowel: ῥάψω, ἔρραψα, where we should expect ῥέμψω, ἔρρεμψα; cf. ῥομ-φεύς.

Fortunately, however, it is possible in almost all important formations to restore the old vocal relations, either from precious remnants in the language itself or with the aid of the sister languages. The language of Homer and the inscriptions are especially valuable; the word-thesaurus of the former is to Greek what the Rig Veda is to the languages of India. The lexicon of Hesychius also yields many obsolete forms, which approve themselves as valuable remnants of the language in its natural form, not as yet curtailed and stiffened by the dictates of literary purism.

ABLAUT I.

Verbal Formations.

1. The singular active of non-thematic (root-) presents originally was accented on the root, which appears in its first strong form. The material in Greek is very meagre: εἶ-μι, εἶ and Hom. εἶ-σθα, εἶ-σι: ἴ-μεν.—εἰμί (ἐσ-μι), Dor. ἐσ-σί, ἐσ-τί: Dor. (σ)-εντί; further the Hom. infinitive ἔδ-μεναι; cf. Lat. *es-t* = Sk. *át-ti.* For στεῦ-ται and σοῦ-ται see Curt. Verb. I^2 154. An I. E. irregularity is contained in ϰεῖ-ται = Sk. *çé-te* = Zd. *çaē-tē*, because ablaut I appears in the middle. From class BB there is another example: φη-μί, φή-ς, φη-σί: φᾰ-μέν. Sanskrit has this class largely represented: *é-mi: i-más; ás-mi: s-más; hán-mi: ghn-ánti; vác-mi: uc-más*, etc. In Gothic a single example has survived: *i(s)-m: s-ind;* the only Latin instance which preserves the difference between strong and weak forms is contained in *es-t: s-unt.*

2. The entire system, active and middle, of thematic presents, when corresponding to the Hindu I class, is made with abl. I. They are to be found in Curt. Verb. I^2, 210 and 223. Examples: ἔχ-ω, δέχ-ομαι, τεί-ω, ϰε(*y*)-ομαι, ϰλέ(Ϝ)-ω, ἀλεύ-ομαι, δέρ-ω, πέλ-ομαι, μέν-ω, φείδ-ομαι, φεύγ-ω, τέρσ-ομαι, σπένδ-ω, μέμφ-ομαι, etc. Of class BB: λήθ-ω, τήϰ-ω, ἥδ-ομαι, etc. The Gothic presents of the I, II, IV and V ablaut classes: *lig-a, sniv-a, taír-a, hlif-a, beit-a, biug-a, v̇aírþ-a, bind-a, etc.*; Sk. *vás-ati, gáy-ati, sráv-ati, bódh-ati, mánth-ati, etc.*; Lat. *leg-o, reg-o, trem-o, dīc-o* (= *deic-o*), *fīd-o* (= *feid-o*), *dūc-o* (= *deuc-o*), *ūr-o* (= *eus-o*), *clep-o, serp-o*, etc.

3. A considerable number of the iota-class are made (irregularly) with abl. I: πέσσω, σείω (σεϜ-*y*ω), χείω (χεϜ-*y*ω), πλείω (πλεϜ-*y*ω), ϰλείω

(χλεϜ-γω), τείρω, φθείρω, σπείρω, ἀγείρω, ἐγείρω, δείρω, κείρω, μείρομαι, πείρω, εἴρω (σερ-γω), τέλλω, δέλλω and ζέλλω, ὀφείλω, ὀφέλλω, στέλλω, κέλλω, ὀκέλλω, μέλλω, σκέλλω, τείνω, γείνομαι, θείνω, κτείνω, λεύσσω, ἔρδω (= Ϝεργ-γω). For presents of the iota-class made with abl. III, as πταίρω (= πτṛ-γω), see p. 321.

4. The future systems, active and middle, are made with ablaut I: ἐδ-οῦμαι, κεί-σομαι, πλευ-σοῦμαι, δερῶ, στελῶ, τενῶ, νεμῶ, λείψω, φευξοῦμαι, τέρψω, βλέψω, πέμψω, etc. In like manner Sk. *dhok-ṣyati*, *je-ṣyati*, *bhav-iṣyati*, etc.

5. The sigmatic (first) aorist system, active and middle, is made with ablaut I: ἔλεξα, ἔ-δδει-σα, ἔ-ρρευ-σα, ἔ-φθειρα, ἔ-στειλα, ἔ-μεινα, ἔ-λειψα, ἔ-θρεψα, etc. To these correspond the simple *s*- aorists in Sk. (Whitney §§ 878, 879): *a-çro-ṣ-i*, *a-ne-ṣ-i*, etc. Cf. Curtius' Studien IX 313.

6. The first aorist passive, a special Greek formation, is made with this ablaut with very few exceptions. *It differs in this important respect from the second aorist passive, which is made with ablaut* III. Those who have hitherto attempted the explanation of these two difficult formations have, it seems, overlooked this fact or neglected to bring it to bear upon their investigation. We subjoin all the instances from roots of class AA: ἠνέχ-ϑην, ἐ-πέφ-θην, ἐ-πέχ-ϑην, ἐ-στέφ-ϑην, ἐ-λέχ-ϑην, ἐ-πνεύσ-ϑην, ἐ-πλεύσ-ϑην, ἠγέρ-ϑην (ἀγείρω), ἠγέρ-ϑην (ἐγείρω), ἐ-κέρ-ϑην, ἐ-πείσ-ϑην, ἠλείφ-ϑην, ἠρείχ-ϑην, ἐ-λείφ-ϑην, ἠμείφ-ϑην, ἐ-λείχ-ϑην, ἐ-δείχ-ϑην, ἐ-ψεύσ-ϑην, ἐ-τεύχ-ϑην, ἐ-ζεύχ-ϑην, ἐ-γεύσ-ϑην, εὐ-θείς, ἐ-κλέφ-ϑην, ἐ-θέλχ-ϑην, ἐ-πλέχ-ϑην, ἐ-βλέφ-ϑην, ἐ-φλέχ-ϑην, ἐ-δέρχ-ϑην, ἐ-στρέφ-ϑην, ἐ-τρέφ-ϑην, ἐ-θρέφ-ϑην, ἐ-σπέρχ-ϑην, ἐ-τέρφ-ϑην, ἐ-βρέχ-ϑην, ἐ-στέρχ-ϑην, ἐ-σπείσ-ϑην (= ἐ-σπενδ-ϑην), ἐ-μέμφ-ϑην, ἐ-πέμφ-ϑην; of class BB cf. ἐ-λήφ-ϑην and ἐ-δήχ-ϑην.

Seeming exceptions are the Doric ἐ-στράφ-ϑην, ἐ-τράφ-ϑην, etc. Their vowels are on the same level with, and are to be explained like τράφ-ω, στράφ-ω, τράχ-ω, etc., as a special dialectic peculiarity.

Interesting are the cases in which first and second aorist passive occur from the same root: ἐ-κέρ-ϑην : ἐ-κάρ-ην; ἠλείφ-ϑην : ἐξ-ηλίφ-ην; ἠρείφ-ϑην : ἠρίπ-ην; ἐ-ζεύχ-ϑην : ἐ-ζύγ-ην; ἐ-κλέφ-ϑην : ἐ-κλάπ-ην; ἐ-πλεχ-ϑην : ἐ-πλάκ-ην; ἐ-δέρχ-ϑην : ἐ-δράκ-ην; ἐ-στρέφ-ϑην : ἐ-στράφ-ην; ἐ-τέρφ-ϑην : ἐ-τάρπ-ην; ἐ-τρέφ-ϑην : ἐ-τράπ-ην; ἐ-θρέφ-ϑην : ἐ-τράφ-ην; ἐ-βρέχ-ϑην : ἐ-βράχ-ην; cf. from class AA ἐ-τήχ-ϑην : ἐ-τᾰκ-ην. For the remaining second aorists passive see p. 324.

Nominal Formations.

7. Nominal and adjectival bases in ες are made with ablaut I: (Ϝ)ἔπ-ος, νέφ-ος, ἔχεσ-φιν· ἅρμασιν (Hesych.), ἔτ-ος, πέκ-ος, λέπ-ος,

πέ(σ)-ος, τέκ-ος, στέγ-ος, τέγ-ος, ἔρεβ-ος, λέχ-ος, ἕδ-ος, ῥέγ-ος, ῥέθ-ος, στέφ-ος; δέ(y)-ος; ῥέ(Ϝ)-ος, κλέ(Ϝ)-ος, σκεῦ-ος; δέρ-ος, μέρ-ος, θέρ-ος, εἶρ-ος, ἔρ-ος; ἕλ-ος, βέλ-ος, τέλ-ος, σκέλ-ος, μέλ-ος; μέν-ος, γέν-ος, σθέν-ος; νέμ-ος, γέμ-ος; εἶδ-ος, μεῖδ-ος, τεῖχ-ος; γλεῦκ-ος, κεῦθ-ος, ζεῦγ-ος, ἔρευθ-ος, τεῦχ-ος, ψεῦδ-ος; κέρδ-ος, ἕρκ-ος, θέρσ-ος, στρέφ-ος; βλέπ-ος, φλέγ-ος, ἕλκ-ος, κλέπ-ος, βένθ-ος, πένθ-ος, ῥέγκ-ος, (ῥέγχ-ος), ἔγχ-ος, ἔλεγχ-ος, φέγγ-ος, λέμβ-ος, λέμφ-ος.

Adjectives: *ποδ-ηνεκής, εὐ-μενής, ἰο-δνεφής, εὐ-σεβ-ής, Ἐτεο-κλῆς* (theme: *-κλεϜ-ες*), *Εὐ-πτερής, Ἁλι-θερσής, νημερτής, περι-σκελής, ζα-φλεγής, θιμο-κρετ-ής, ἀ-τενής, ἀμφι-ρρεπής, ἀ-σπερχές, ἀ-μερφές· αἶσχρον* (Hesych.), etc.

As first members of compounds: *φερέσ-βιος, ἐγερσί-μαχος, θελξί-νοος*, etc.

Cf. also nouns in *ας*: *σέβ-ας, δέμ-ας, σέλ-ας, γέρ-ας, σκέπ-ας, κρέ-ας, λέπ-ας, (ἀ-τρέμ-ας).*

Formed by association with *βαθ-ύς, θρασ-ύς, κράτ-υς*, etc., are made *πάθ-ος, βάθ-ος, θάρσ-ος* and *θράσ-ος, κράτ-ος* and *κάρτ-ος*, etc.; some historically correct forms *πένθ-ος*, etc., are also preserved. Otherwise irregular are *λάχ-ος, ὄχ-ος*; *εὐ-τυχής* and *δυσ-πονής* are denominative formations.

Sk. *ráj-as, pás-as, hár-as, mán-as, ján-as, çráv-as, dhárṣ-as; su-mánas* = *εὐ-μενής*; *satyá-çravas* = *Ἐτεο-κλῆς*, etc. Lat. *gen-us, nem-us, vet-us*, etc. In comp. *de-gener*. In Goth. these nouns are extended to *a*-bases: *riq-iz-(a)* = Sk. *ráj-as* = *ἔρεβ-ος, rim-is-(a), sig-is-(a), þeih-s-(a), veih-s-(a).*

8. The peculiar proper names *Μειξίας, Ἀμείψιας* show abl. I; cf. *Πειθ-ίας, Φειδίας*, etc.

9. Bases in *τωρ, τηρ, της* are formed with ablaut I: *Ἕκ-τωρ, Νέσ-τωρ, Μέν-τωρ, Στέν-τωρ, νεμ-έ-τωρ, ἕρκ-τωρ, κέν(τ)-τωρ, θέλκ-τωρ, τεύκ-τωρ*;—*θελκ-τήρ, θρεπ-τήρ, στρεπ-τήρ, ζευκ-τήρ, πευσ-τήρ, τευκ-τήρ, ἀλειπ-τῆρ, πεισ-τήρ* (: *πείθω*), *πεισ-τήρ* (cable, from a root *πενθ* = Sk. *bandh-* = Goth. *bind-*), *γεν-ε-τήρ, νευσ-τήρ* and *νευ-τήρ· κολυμ-βητής* (Hesych.), *ψεύσ-τειρα*;—*ἔπ-έ-της, νεφελ-ηγερέ-της, ἐρ-έ-της, Μέν-της, αὐθ-έν-της, ἀλείπ-της, ἀλεί-της, ψεύσ-της, πεύσ-της, κλέπ-της, Θερσ-ί-της.*

The secondary suffix *τρο-* follows the same norm: *λέκ-τρον, κέν(τ)-τρον, δέρ-τρον, φέρ-τρον, τὰ θρέπ-τρα*; *φέρετρον* and *τέρ-ε-τρον.*

Sk. *vák-tar, jé-tar, çró-tar, yan-tár, bhet-tár, çnáth-i-tar; çró-tra, vás-tra, hó-tra, san-í-tra*, etc. Lat. *sec-tor, emp-tor, vec-tor, lec-tor, tex-tor, gen-i-tor, etc.*

10. Noun-bases in *man* (neuters in *μα-τ*; masculines in *μων*) are

made with abl. I: εἶ-μα; Aeol. ἔμ-μα (root Ϝεσ), πέμ-μα, λέμ-μα, ζέσ-μα, στέμ-μα, βδέσ-μα, ὄρεγ-μα, ῥέγ-μα; δεῖ-μα, χεῖ-μα, πνεῦ-μα, ῥεῦ-μα, χεῦ-μα, νεῦ-μα, δεῦ-μα; τέρ-μα, φέρ-μα, σπέρ-μα, ἕρ-μα, δέρ-μα, κέρ-μα; πέλ-μα, τέλ-μα, σέλ-μα; ἄλειμ-μα, ἔρειγ-μα, ἔρεισ-μα, λεῖμ-μα, δεῖγ-μα, ψεῦσ-μα, τεῦγ-μα, κεῦθ-μα, ζεῦγ-μα, γεῦ-μα; βλέμ-μα, χλέμ-μα, θέλγ-μα, πλέγ-μα, φλέγ-μα, ἔργ-μα, δέργ-μα, στρέμ-μα, θρέμ-μα, πεῖσ-μα (= πενθ-μα). As an example of an exception χύ-μα is late; χεῦ-μα Homeric.

Sk.: *kár-man*, *bhár-man*, *tók-man*, *várt-man*, etc. Lat. *ger-men*, *seg-men*, *ter-men*, *lū-men* (= *leuc-men*), etc.

Nouns in μων: χει-μών, λει-μών, πλεύ-μων, πνεύ-μων, τέρ-μων; τερ-ά-μων and τελ-α-μών; derivatives: φλεγ-μον-ή, βέλ-ε-μν-ον, στελ-μον-ίαι; in comp. ἀν-εί-μων, 'unclad': εἶ-μα.—Sk. *he-mán*, *varṣ-mán*, *dhar-mán*, etc.

Lat. *ter-mo*, *ser-mo*.—Goth. *hliu-ma*, gen. *hliu-min-s* = (*çro-maṇ* in *çró-ma-ta*); *hiuh-ma*, *milh-ma*, *skei-ma*.

11. The comparatives and superlatives in ιων and ισ-τος are formations accented on the root-syllable, and are regularly made with ablaut I: κερδ-ίων, κέρδ-ιστος; μείζων, μέγ-ιστος, μεί-(*y*)ων; κρείσσων (κρέτ-*y*ων), Doric-Ionic κρέσσων; the superlatives κράτ-ιστος and κάρτ-ιστος (abl. III) have been attracted to the vocalic condition of the positive κρατ-ύς. The old Attic comparative of ὀλίγος is ὀλείζων (ὀλειγ-*y*ων) Curt. Stud. VIII 254; θᾱσσων and ἐλᾱσσων are new comparatives to ταχ-ύς and ἐλαχ-ύς,[1] after the nasal character of their root-vowel had been forgotten (cf. p. 296); they are to their positives what μήκ-ιστος is to μακ-ρός.

Sk. *kṣép-īyas*, *kṣép-ishṭha*: *kṣip-rá*; *ráj-īyas*, *ráj-iṣṭhạ*: *ṛj-ú*; *bám̐h-iṣṭha*: *bah-ú* (*bṃh-u*); *ój-īyas*, *ój-iṣṭha*: *ug-rá*; *çóc-iṣṭha*: *çuk-rá*, etc.

12. Formations in ανο, ανη, ονη (υνη), seem to be pretty equally divided between abl. I and II. With abl. I: ἑδ-ανός, σφεδ-ανός, σκεπ-ανός, στεγ-ανός; σκέπ-ανον, δρέπ-ανον, λείψ-ανον; ἑρκ-άνη, σφενδ-όνη, περ-όνη, βελ-όνη, ἀμπ-εχ-όνη; cf. τέμ-ενος.

With abl. II: ζό(Ϝ)-ανον, ὄργ-ανον, πόπ-ανον, ὄχ-ανον, χό(Ϝ)-ανος; χόδ-ανος, ὀρφ-ανός, ῥόδ-ανός, οὐρ-ανός (= Ϝορ-ανός), ὀρκ-άνη (ὀρχ-άνη), τορ-ύνη; δόρκ-ανα (Hesych.).

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[1] Historically correct comparatives would be ϑέγχ-ιων and ἐλέγχ-ιων, as is shown by Zend *tā̃sh-yāo* and *tañc-ista-*; and *reñj-yō* and *reñj-ista-*, cf. Sk. *rám̐h-as* fr. abl. I. So the perfect εἴ-ληχ-α occurs in addition to the historically correct λέ-λογχ-α constructed upon the syllable λαχ in ἔ-λαχ-ον in imitation of εἴ-ληφ-α: ἔ-λαβ-ον; λέ-ληθ-α: ἔ-λαθ-ον (verbs of class BB); for the fact that the root-vowel of ἔ-λαβ-ον is of different origin from that of ἔ-λαχ-ον has been lost to the consciousness of the language.

Sk. *cárt-ana* would indicate by its palatal initial that this kind of formation there contains abl. I; cf. Kuhn's Zeitschrift XXV 72.

ABLAUT II.

Verbal Formations.

1. The Greek as well as the I. E. perfect is a non-thematic or root-formation. Like the non-thematic present, it originally exhibited the difference of accent and root-form between the singular active on the one hand and the dual-plural active and entire middle on the other. The singular active having the accent on the root contained and still regularly contains strong forms; in case of class AA, ablaut II: ἔ-οικ-α, μέ-μον-α : ἔ-ϊκ-τον, μέ-μα-τον; of class BB: λέ-ληθ-α, πέ-φην-α: λέ-λᾰσ-ται, πέ-φᾰν-ται. The perfects with ο are given in Curt. Verb. II 185 and 188. Examples: τέ-τοκ-α, δέ-δοι-κα, ἔ-φθορ-α, ἔ-ϝολ-α, κέ-κον-α, δέ-δρομ-α, πέ-ποιθ-α, ἐλ-ήλουθ-α; δέ-δορκ-α, κέ-κλοφ-α, πέ-πονθ-α, λέ-λογχ-α, πέ-πομφ-α.[1]

Sk. *ci-kā́y-a*, *ji-gā́y-a*, *ci-kéta*, *ja-ghán-tha*, etc., show by their gutturals that the root-vowel is not identical with that of the presents: *jáy-ati*, *cét-ati*, *hán-ti*, etc. In the presents the palatals bear witness to the palatal quality of the root-vowel (a^e : ha^en-*ti*), while the perfects show the original gutturals intact, because their vowels are in fact identical with the ο of Greek perfects.

Goth. has *a*: *gab*, *bar*, *stal*, *man*, *bait*, *baug*, *varþ*, *band*, etc. Lat. *o* in the old perfects: *mo-mord-i*, *spe-pond-i* and *te-tond-i*.

2. Derived verbs in *aya*, Gr. ε(*y*)ω, take abl. II, ὀχ-έω, ἐκ-ποτ-έομαι, φοβ-έω, φορ-έω, ῥοφ-έω, πον-έω, στοιχ-έω, πορθ-έω, στροφ-έω, τροπ-έω, τροφ-έω, στοργ-έω, τρομ-έω, στροβ-έω, ῥομβ-έω, ὀρχ-έομαι; the same formations are contained in με-μόρ-ηται, βε-βόλ-ημαι, ἀπ-ε-κτόν-ηκα,

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[1] Many are the intrusions which have been made upon this rule of root-vowels for the singular active. So the vowel-group ευ, as is well known, has with the exception of the single ἐλ-ήλουθ-α, supplanted the group ου: τέ-τευχ-α, πέ-φευγ-α, κέ-κευθ-α, πέ-πνευ-κα. Not infrequently the weak forms of the perfect have intruded upon the singular, as vice versa the strong forms have usually usurped the territory of the weak in the active dual and plur. (see p. 324): δέ-δι-α with δέ-δοι-κα; ἔ-φθαρ-κα with ἔ-φθορ-α; ἔ-σπαρ-κα, κέ-καρ-κα, ἔ-σταλ-κα, τέ-τα-κα, ἀλ-ήλιφ-α, ἐρ-ήριπ-α; the frequency of κ-perfects among these attests the fact that these are later formations, made after the accentual law, the cause of the difference between weak and strong forms, had become extinct. A few perfects are made upon the theme of the present: κέ-χανδ-α: χανδάνω; (ἐ-πτᾱρ-α: πταίρ-ω).—εἴ-ληχ-α by the side of λέ-λογχ-α is made like εἴ-ληφ-α, λέ-ληθ-α, etc.; λα-γ-χ-άνω, ἔ-λαχ-ον (root-syllable λυ̣χ), apparently equal to λα-μ-β-άνω, ἔ-λαβ-ον (root-syllable λᾰβ) show the reason.

σπορ-ητός, δομ-ήτωρ, etc.; an exception: στιβ-έω made directly upon στίβ-ος.

Goth. *ga-vag-ja*, *vahs-ja*, *nas-jands*, *lag-ja : lig-a; sat-ja : sit-a; dragk-ja : drigk-ja; kaus-ja : kius-a; rak-ja*, *þan-ja*, *þrag-ja*, etc.

Lat. *mon-eo*, *noc-eo*, *tond-eo*, *tong-eo*, *spond-eo*, etc.

Nominal Formations.

3. A special Greek formation made in close junction with the preceding are the themes in εύς: τοκεύς, χο(Ϝ)-εύς, τορ-εύς, φορ-εύς, φθορ-εύς, σπορ-εύς, γον-εύς, φον-εύς, δρομ-εύς, τομ-εύς, νομ-εύς, πορθ-εύς, στροφ-εύς, τροφ-εύς, ἀμοργ-εύς, ἀμολγ-εύς, πλοκ-εύς, κλοπ-εύς, ῥομφ-εύς, πομπ-εύς, etc. στιβ-εύς occurs like στιβ-έω.

4. Themes in *a* (Greek ο, masc. and neut.; η feminine) are formed with abl. II. The accent in historical times is generally found on the suffix in the case of *feminines;* on the suffix also in the case of *masculines* when they have the function of *adjectives* or *nomina agentis;* but on the root in the case of *masculines* when they are *abstracts* or *names of objects*. Accordingly there are:

(α) Feminines: ἐν-(Ϝ)οπ-ή, σκοπ-ή, ῥο(Ϝ)-ή, πνο(Ϝ)-ή, βολ-ή, στολ-ή, φον-ή, τομ-ή, στοιβ-ή, σπουδ-ή, κλοπ-ή, πομπ-ή, etc.

(β) Adjectives and Nomina Agentis: δοχ-ός, σκοπ-ός, λοιπ-ός, σμοι-ός, θο(Ϝ)-ός, βορ-ός, τομ-ός, ἀοιδ-ός, ἀμοιβ-ός, τροφ-ός, κλοπ-ός, ὁλκ-ός, πομπ-ός, φορ-ός (cf. φόρ-ος), τροχ-ός (cf. τρόχ-ος), etc.

(γ) Abstracts and Names of Objects: τόκ-ος, φόβ-ος, λόγ-ος, χό(Ϝ)-ός, σό(Ϝ)-ος, νόμ-ος, φόν-ος, δρόμ-ος, βόλ-ος, στόλ-ος, πτόρ-ος, φόρ-ος, στοῖχ-ος, τρόχ-ος, δνόφ-ος, μόμφ-ος, ῥόγχ-ος, etc., etc.

Exceptionally forms with abl. I: φειδ-ός, λευκ-ός, Δελφ-οί, ἔργ-ον; with abl. III: φυγ-ή, ζυγ-όν, στίχ-ος, etc.

Sanskrit proves abl. II in *gár-as* = βορ-ά; *-gar-as* = βορ-ός = Lat. *-vor-us* (in *carni-vor-us*); *ghan-á-s* (cf. φόν-ο-ς); *gáy-a-s; abhi-gar-á-s* from the fact that the initial guttural appears unpalatalized; other instances: *ark-á-s*, *aṁk-á-s*, *rok-á-s*, *pari-varg-á-s*, etc.

Goth. *snaiv-(a)-s*, *saggv-(a)-s*, *saggq-(a)s; dragk-(a); ga-þrask-(a);* fem. *laib-a*, *vrak-a*, *staig-a*. Lat. *dol-u-s*, *mod-u-s; tog-a*.

5. Themes in ι are made with ablaut II: τρόχ-ις, τρόφ-ις, τρόπ-ις, Ξό(Ϝ)-ϊς, χρόμ-ις, μόμψ-ις, δρόπ-ις· τρυγητός (Hesych.), φρόν-ις, Μόλπ-ις. Those in ιδ are pretty evenly divided between abl. I and II and generally have the tone on the suffix: ἐλπ-ίς, σκελ-ίς and σχελ-ίς, σελ-ίς, λεπ-ίς, κερκ-ίς, Σπεχ-ίς; ζο(Ϝ)-ίς, βολ-ίς, λοπ-ίς, φλογ-ίς, βροχ-ίς. Goth. *mat-(i)s*, *balg-(i)s*.

6. A special Greek formation (probably secondary) with abl. II

are the nouns in άδ: λογ-άς, σπορ-άς, στολ-άς, λοιπ-άς, ὁλκ-άς, πλοκ-άς, λοπ-άς, δρομ-άς, ὀργ-άς, δορκ-άς, φορβ-άς, νομ-άς, ὀρχ-άς, τροχ-άς, φοιτ-άς, Στοιχ-άδες, Στροφ-άδες; exceptions with abl. III: φυγ-άς, νιφ-άς, μιγ-άς.

7. Themes in *ma* (μος, μη, μον; ιμος, αμος) are regularly formed with abl. II; the accent wavers between root and suffix, except in the case of those in ιμος: γόν-ιμος, λόπ-ιμος, μόρσ-ιμος, τρόφ-ιμος, πλόκ-ιμος, σπόρ-ιμος, φθόρ-ιμος. Those without intervening vowel are (*a*) With the accent on the root: πότ-μος, οἶ-μος, τόρ-μος, ὅρ-μος, ὅλ-μος, ὅρκ-μος; λόχ-μη, οἴ-μη, τόλ-μη. (*b*) With the accent on the suffix: ῥογ-μός, ἀλοι-μός, λοι-μός, συν-εοχ-μός, κορ-μός, φορ-μός, στολ-μός, βροχ-μός, ῥωχ-μός, πλοχ-μός, φλογ-μός; δοχ-μή, ὁρ-μή; also a base κοι-μα- in κοι-μά-ω. In αμος: πλόκ-αμος, ὄρχ-αμος; οὐλ-αμός (= Ϝολ-), ποτ-αμός. Exceptions: θερ-μός has assimilated itself to the vocalic condition of the rest of its group (θέρ-ος, etc.), as is shown by Lat. *form-us*, Sk. *ghar-más*, Goth. *varm-jan;* cf. p. 305. Further abl. I in τέρ-μος, δει-μός, ἀγερ-μός, κευθ-μός, κρεγ-μός; abl. III in τι-μή and λιχ-μά-ω. Sk. *ghar-más* shows ablaut II in its unpalatalized initial guttural; in addition: *é-ma, hó-ma, dhár-ma* = Lat. *for-ma*. Goth. *hai-ma-* (in the plur. *hai-mos*); Germ. *strau-ma, flau-ma*, etc. Lat. *for-ma* (Sk. root *dhar*); *for-mus* (Sk. root *ghar*).

8. Themes in *ta* (το, τη) which are not verbal adjectives are regularly accented on the root-syllable and take abl. II, οἶ-τος, κοῖ-τος, κόν(τ)-τος, νόσ-τος, φόρ-τος, χόρ-τος. With accent on the suffix: ἀορ-τή, βρον-τή, μορ-τή. Sk. *pra-ke-tás*, Zend *duraē-kaē-ta-* indicate by their undisturbed initial guttural the presence of abl. II. Goth. *dau-þa: div-ana-*. Lat. *hor-tus* = κόρ-τος.

ABLAUT III.

As has been seen above, p. 311 ff, this root-form is the one which appears when the accent of a word rests on some formative element, not on the root itself. The special Greek law of accentuation has, however, engrafted itself upon the old I. E. accentual system, leaving but a few fossilized remnants, which have resisted the new law (infinitives of second aorist, verbal adjectives in τός, etc.). The criteria by which the material of this ablaut can be gathered are, however, not wanting; often, as in the ι and υ roots, the forms themselves betoken their ablaut position (ἔ-πιθ-ον: πείθ-ω; ἔ-φυγ-ον: φεύγ-ω) in spite of the disturbed condition of the original accent; when this fails, the related languages, especially the Vedic and Gothic, furnish the necessary data.

Verbal Formations.

1. The dual and plural active and the middle of non-thematic presents were originally accented on the personal suffixes, leaving the root-syllable without accent, which therefore appears in its weakest form, abl. III. ἴ-τον, ἴ-μεν : εἶμι; Doric (σ)-ἐντί : ἐσ-τί; the vowel is inorganically restored in ἐσ-μέν, ἐσ-τόν, etc., as is shown by Sk. *s-más*, Lat. *s-umus*, etc. Of Class BB: φα-μέν, φα-τόν : φη-μί; ἔ-φα-μεν, ἔ-φα-τόν : ἔ-φη-σθα. Sk. *s-más : ás-mi; i-más : é-mi; ha-thás : hán-mi.* Goth. *s-ind : i(s)-m;* Lat. *s-unt : es-t.* With the same ablaut are formed the optative and participle of non-thematic presents: ἰ-οίην, ἰ-όντος : εἶ-μι; (σ)-ὄντος and (σ)-ἐτεός = Sk. *sat-yá-s;* cf. φα-ίην, φά-μενος : φη-μί and Sk. *i-yā́m, y-án(t) : é-mi; duh-yā́m, duh-án(t) : dóh-mi*, etc.

2. For weak forms of reduplicated, non-thematic presents see above p. 297.

3. Reduplicated, thematic presents are formed with ablaut III: γί-γν-ο-μαι, μί-μν-ω, ἴ-σχ-ω, πί-πτ-ω and τίκτω for τί-τκ-ω.' Vedic formations of the same kind: *jí-ghn-a-te : hán-mi; pí-bd-a-māna-s : pa-pád-a; jí-ghy-a-ti : háy-antā.* Lat. *gi-gn-o.*

4. Presents, whose formative element is the inchoative suffix σκ, added immediately to the root are formed with abl. III: βά-σκω (βν̣-σκω) = Sk. *gá-chāmi;* πάσχω (= πν̣θ-σκω) : πένθ-ος; μίσγω (μίγ-σκω) : Μειξίας; ἴσκω (ϝικ-σκω) : ἔ-ϝοικ-α. Cf. of class BB: φά-σκω : φη-μί; λάσκω (λακ-σκω) : λέ-λᾱκ-α; χάσκω (χαν-σκω) : κέ-χην-α. Sk. *ṛ-chā́mi, yú-chāmi, ichā́mi (ish-chāmi), yá-chāmi (yṃ-chāmi), gá-chāmi, úchāmi (uç-chāmi), pṛchā́mi* = Lat. *po(r)sco.*

5. Only a small number of presents of the *iota*-class (IV class) are formed with ablaut III, though this is the historically correct formation; for those with abl. I see p. 314: πταίρω (πτρ̣-yω) : Εὐ-πτέρ-ης; σπαίρω and ἀσπαίρω; βάλλω (βλ̣-yω) : βέλ-ος; δαίρω : δέρ-μα; μαίνομαι (μν̣-yομαι) : μέν-ος; καίνω : κέ-κον-α; βαίνω : Goth. *gim-a* (abl. I). Roots of class BB: φαίνω (φᾰν-yω) : πέ-φην-α; πάλλω (πᾰλ-yω) : ἔ-πηλ-α. With reduplication: τι-ταίνω (τι-τν̣-yω). The Sk. *ya*-class is formed with the same ablaut: *yúdh-yante, hṛṣ-yati, tṛ́ṣ-yati*, etc. Lat. *horreo* and *torreo* (for *hors-eo* and *tors-eo*) are probably of the same formation, equal respectively to Sk. *hṛ́ṣ-yati* and *tṛ́ṣ-yati.*

6. The Sk. *fifth* and *eighth* classes (according to Hindu grammar) are made from abl. III. This fact also explains the identity of the two classes: *tanómi* is to be explained as *ta-nó-mi* for *tṇ-nó-mi* and is formed precisely as *dhṛṣ-nó-mi.* Cf. p. 297; Kuhn's Zeitsch.

XXIV, p. 288 ff *ta-nó-mi : dhṛṣ-nó-mi* = *ta-tá-s : dhṛṣ-tá-s*. In Gr. τά-νυ-ται : πτάρ-νυ-ται = τα-τό-ς : φθαρ-τό-ς. The number of formations of this kind in Greek is not large: μίγ-νυ-μι; τά-νυ-ται; ἄ-νυ-ται = Sk. *sa-nu-té* : αὐθ-έν-της; πτάρ-νυ-μαι : Εὐ-πτέρ-ης. Transitions into the form of thematic presents: μι-νύ-ω : μεί-γων; τα-νύ-ω, ἀ-νύ-ω and ἁ-νύ-ω. From a root of class BB: (ϝ)ἄ̆γ-νυ-μι : ἔ-(ϝ)ᾱγ-α. Exceptions: δείκ-νυ-μι and ζεύγ-νυ-μι. Sk. *ci-nó-mi; su-nó-mi; ṛ-nó-mi; dhṛṣ-nó-mi; va-nó-mi: ván-as; ma-nv-é: mán-as*, etc. Transferred to the thematic formation: *í-nv-āmi, jí-nv-āmi, pí-nv-āmi*, etc.

7. A number of other nasal formations are made with abl. III.

(*a*) Those in ανω: ἱκ-άνω : ἵκ-ω (= εἴκ-ω), ἁμαρτ-άνω : νημερτ-ής; α-ὐξ-άνω : ἀ-ϝέξ-ω; cf. Sk. *ukṣ-āmi* and α-ὐξ-ω; φλιδ-άνω : πέ-φλοιδ-εν (both fr. Hesych.); δαρθ-άνω.

(*b*) Those with double nasal are uniformly made with abl. III: θι-γ-γ-άνω; λι-μ-π-άνω; τυ-γ-χ-άνω; ἐρυ-γ-γ-άνω; πυ-ν-θ-άνομαι; φυ-γ-γ-άνω; λα-γ-χ-άνω (= λṇ-γ-χ-άνω) : λέ-λογχ-α; χα-ν-δ-άνω (χṇ-ν-δ-άνω) : χείσομαι (= χενδ-σομαι); πα-ν-θ-άνω (πṇ-ν-θ-άνω) : πένθ-ος; of roots of class BB: ἁ̆-ν-δ-άνω : ἕ-ᾱδ-α; λᾰ-μ-β-άνω : λήψομαι; λᾰ-ν-θ-άνω : λήθ-ω; μᾰ-ν-θ-άνω.

(*c*) Presents with nasals and υ: ἐρυθ-αίνω : ἔρευθ-ος; ἀλιτ-αίνω : ἀλεί(τ)-της; α-ὐ(σ)-αίνω and α-ὑ(σ)-αίνω : Lat. *ūr-o* (= *eus-o*) and Sk. *óṣ-ati*; παθ-αίνω : πένθ-ος, μαρ-αίνω : Sk. *már-ate*. So also πεπ-αίνω; but as shown above (p. 309) ablaut III of roots of the type A does in most cases not differ graphically from abl. I. With reduplication: τε-τρ-αίνω. In Sk. the *seventh* class and the *sixth*, when it shows nasals in the root-syllable, correspond to these types: *ri-ná-k-ti, yu-ná-k-ti, vi-n-d-á-ti*, etc. Lat. formations with nasals: *sci-n-d-o, fi-n-d-o* (Sk. *bhi-ná-d-mi*), *li-n-qu-o* (λι-μ-π-άνω, *ri-ná-c-mi*), *ru-m-p-o, tu-n-d-o* show abl. III.

8. The non-thematic second aorist (μι-form) is historically an imperfect belonging to a non-thematic present, and accordingly shares with it the peculiarity of differentiating the root-form of the singular active (abl. I) from that of the remaining persons of the indicative, active and middle, the entire optative and the participles (abl. III). Thus in the Veda: *á-çrav-am* and *á-cro-t : çru-tám; várk-(s) : á-vṛk-ta; á-gan-(t) : ga-tám.*

In roots from class BB the Greek has ἔ-πτη-ν : ἐ-πτά-μην, πτᾰ-ί-ην; ἔ-βη-ν : βᾰ-ί-ην; ἔ-τλη-ν : ἔ-τλᾰ-ν, τλᾰ-ί-ην; ἔ-φθη-ν : φθᾰ́-ν, etc.

In roots of class AA this original vocalic difference appears also upon close search. There occur in the first place the following forms with ablaut III: *ἐ-χύ-μην*, *ἐ-σσύ-μην*, *κλῦ-θι* and *κλύ-μενος*; *ἀπο-υρά-ς* and *ἀπο-υρά-μενος* : *ἀπό-(Ϝ)ερ-σε*; *ἔ-κτα-το* : *κτόν-ος*; *ἀπ-έ-φα-το· ἀπέθανεν* (Hesych.) : *φόν-ος*.

For traces of formations containing ablaut I and supplementing these, we must look to a set of peculiar aorists, which have been until a very late day the crux of grammarians: *ἔ-χευ-α* and *ἔ-χε(Ϝ)-α*, *ἔ-σσευ-α*, *ἠλευ-άμην* and *ἠλε(Ϝ)-άμην*. Brugman, Bezz. Beiträge II 245 ff has ingeniously proved that these are not sigmatic aorists which have dropped their *σ*, but they are strong forms of root-aorists, whose corresponding weak forms live in *ἐ-χύ-μην* and *ἐ-σσύ-μην*. An old conjugation was *ἔ-χευ-α* (for *ἔ-χευ-μ̣*), *ἔ-χευ-ς*, *ἔ-χευ-τ* : *ἔ-χυ-μεν*, etc., precisely as the imperfect of a *μι*-verb: *ἐ-τί-θη-ν*, etc. : *ἐ-τί-θε-μεν*, etc., or the Sk. root aorist *á-çrav-am*, *á-çro-s*, etc.: *á-çru-ma*. But the strong forms attracted the weak forms of the active to their vowel condition in accordance with that same tendency towards uniformity which has disturbed the original difference between the singular and the dual-plural of the perfect active. *ἔ-χευ-α*, *ἔ-σσευ-α*, etc., are therefore conjugated independently through the active like sibilant aorists, and even middle forms (*ἠλευ-άμην*) occur; but *ἐ-χύ-μην* and *ἐ-σσύ-μην* have preserved the historically correct root-forms belonging to all the persons, except the singular active.

9. The common second aorist is a formation which corresponds to an imperfect of a thematic present, which has the accent on the thematic vowel, therefore ablaut III (see Whitney, Gram. 846). The true accentuation, which is the cause of the weak root-form, appears in the infinitives and participles: *πιθ-εῖν*; *πιθ-έσθαι*, *πιθ-ών*, *πιθ-όμενος*. From roots of type A: *ἔ-σχ-ον*, *ἐ-πτ-ό-μην*, *ἔ-σπ-ον*: *ἕπ-ω*, *ἔ-σπ-ον*: Lat. *in-sec-e;* *ἤνεγκ-ον*. Irregularly with abl. I: *ἔ-τεκ-ον*. From roots of type B: *ἄμ-πνυ-ε*, *ἔ-κλυ-ον*, *ἔ-πταρ-ον*, *ἠγρ-όμην* : *ἐγείρω*; *ἀγρ-όμενος*: *ἀγείρω*, *ὦφλ-ον*, *ἔ-καν-ον*, *ἔ-κταν-ον*, *ἔ-ταμ-ον*, *ἔ-δραμ-ον*. Irregularly with abl. I: *ἀγερ-έσθαι*: *ἀγρ-όμενος* (both Homeric); *ὤφελ-ον*: *ὦφλ-ον*; *ἔ-τεμ-ον* (late): *ἔ-ταμ-ον*. From roots of type C: *ἔ-πιθ-ον*, *ἤρικ-ον*, *ἤριπ-ον*, *ἔ-φλιδ-ον* (Hesych.), *εἶδ-ον*, *ἰκ-όμην*, *ἔ-λιπ-ον*, *ἤλιτ-ον*, *ἔ-στιχ-ον*, *ἔ-θιγ-ον*, *ἔ-δικ-ον*, *ἔ-ψυθ-εν· ἐψεύσατο* (Hesych.), *ἔ-τυχ-ον*, *ἔ-φυγ-ον*, *ἤλυθ-ον*, *ἔ-κυθ-ον*, *ἐπυθ-όμην*, *ἤρυγ-ον*, *ἔ-πραθ-ον*, *ἔ-παρδ-ον* and *ἔ-πραδ-ον*, *ἔ-δρακ-ον*, *ἔ-τραπ-ον*, *ταρπ-ώμεθα* and *τραπ-είομεν*, *ἔ-βραχ-ον*, *ἤμαρτ-ον* and *ἤμβροτ-ον*, *ἔ-δαρθ-ον* and *ἔ-δραθ-ον*, *ἔ-δραπ-ον*, *ἔ-παθ-ον*, *ἔ-δακ-ον*, *ἔ-χαδ-ον*, *ἔῤ-ῥαφ-ον*, *ἔ-λαχ-ον*. From roots of class BB: *ἔ-λαθ-ον*, *ἔ-λαβ-ον*, *δι-έ-τμαγ-ον*, *ἔ-λακ-ον*, etc. Sk. *á-vid-am*, *á-ruh-am*, *á-vṛdh-am*, *á-dṛç-am* = *ἔ-δρακ-ον*; *á-radh-at*: *á-randh-ayat*.

10. The reduplicated thematic aorist is formed with ablaut III: ἔειπον (= ἐ-ϝε-ϝπ-ον) = Sk. *ávocam* (= *a-va-vc-am*); ἑ-σπ-ό-μην = Sk. *(á)-sa-çc-a-t;* ἐ-κε-κλ-ό-μην, ἔ-πε-φν-ον, ἔ-τε-τμ-ον, πε-πιθ-ό-μην πε-φιδ-ό-μην (from it πε-φιδ-ήσομαι); τε-τυκ-ό-μην, πε-πυθ-ό-μην, τε-ταρπ-ό-μην; from class BB: λε-λᾰθ-ό-μην : λήθ-ω. Sk. *á-voc-am*, *á-néç-am* (= *á-va-vc-am* and *á-na-nç-am;* cf. Kuhn's Zeitsch. XXV 61), *á-pa-pt-am*, *á-ti-tviṣ-am*, *á-da-dhṛṣ-am*, etc.

A non-thematic, reduplicated aorist is κέ-κλυ-θι, κέ-κλυ-τε with abl. III; cf. Sk. *á-va-vṛt-ran* and *á-sa-sṛg-ran.* If fuller material of this kind of formation existed, it would probably exhibit the usual strong forms (abl. I) in the sing. active; cf. Vedic *dī-dhar-(s)*, second pers. sing., *a-jī-gar-(t)*, third pers. sing.

11. The second aorist passive system is formed with ablaut III, differing markedly in this respect from the first passive system, which is formed with abl. I; cf. p. 315: ἐ-ῤῥύ-ην, ἐ-σσύ-ην, ἐ-πτάρ-ην, ἐ-φθάρ-ην, ἐ-σπάρ-ην, ἐ-δάρ-ην, ἐ-κάρ-ην, ἐ-πάρ-ην, ἐ-(ϝ)άλ-ην, ἐ-στάλ-ην, ἐ-κάν-ην, ἐξ-ηλίφ-ην, ἠρίπ-ην, ἐ-μίγ-ην, ἐ-λίπ-ην, ἐ-ζύγ-ην, ἐ-κλάπ-ην, ἐ-πλάκ-ην, ἐ-λάπ-ην, παρδ-ήσομαι, ἐ-δράκ-ην, ἐ-στράφ-ην, ἐ-τράπ-ην, ἐ-τράφ-ην, ἐ-τάρπ-ην, ἐ-βράχ-ην, ἐ-ῤῥάφ-ην. Exceptions with abl. I: ἐ-φλέγ-ην, ἐ-πλέκ-ην, variant for ἐ-πλάκ-ην; ἐ-τερσ-ην. From roots of class BB: ἐ-τᾰ́κ-ην : τέ-τηκ-α; ἐ-σᾰ́π-ην : σέ-σηπ-α; ἐ-σφᾰ́λ-ην : ἔ-σφηλ-α; ἐ-φάν-ην : πέ-φην-α, etc.

12. The domain of ablaut III in the perfect, it has been seen, regularly is: The dual and plural active and the entire middle of the indicative; the optative, active and middle, and the participles; cf. p. 318. So in the Rig Veda: Indic: *va-vṛt-ús*, *va-vṛt-é;* Optat: *va-vṛt-y-ā́ma*, *va-vṛt-ī-máhi;* Participles: *va-vṛt-vát* and *va-vṛdh-āná-s* (all abl. III) against *va-várt-a* (abl. II).

In Greek this relation has been disturbed by the inroads of the strong forms of the singular active (abl. II), so that, as a rule, the perfect system follows their norm through all forms of the active, showing ablaut II. However, the traces of the old regime of ablaut III in the active are not wanting, especially in the older language. Of the indicative and participle active from roots of class AA there are to be found: ἔ-ϊκ-τον, ἐ-ΐκ-την : ἔ-οικ-α; cf. middle: ἔ-ϊκ-το and ἤ-ϊκ-το;—ἐ-πέ-πιθ-μεν : πέ-ποιθ-α;—ἴσ-τον, ἴδ-μεν, ἰδ-υῖα : οἶδ-α;—δεί-δι-μεν and δέ-δι-μεν, ἐ-δε-δί-την, δε-δι-ώς : δεί-δοι-κα and δέ-δοι-κα; ἐλ-ηλύθ-αμεν : εἰλ-ήλουθ-α;—ἐκ-γέ-γα-τον, γέ-γα-μεν, γε-γα-ώς : γέ-γον-α;—μέ-μα-τον, μέ-μα-μεν, με-μα-ώς : μέ-μον-α;—πέ-πασ-θε, πε-παθ-υῖα : πέ-πονθ-α. From roots of class BB: τέ-τλᾰ-μεν, τε-τλᾰ-ί-ην : τέ-τλη-κα;—κέ-κρᾰχ-θι : κέ-κρᾱγ-α;—ἕ-στᾰ-τον, ἕ-στα-μεν : ἕ-στη-κα;—

δε-δᾰ-υῖα (Nonnius VI 305) : *δέ-δη-ε* (Iliad) ;—*με-μᾰκ-υῖα* : *με-μηκ-ώς* ; *τε-θᾰλ-υῖα* : *τέ-θηλ-α* ;—*λε-λᾰκ-υῖα* : *λέ-ληκ-α* ;—*σε-σᾰρ-υῖα* : *σε-σηρ-ώς* ;—*ἀρ-ᾰρ-υῖα* : *ἀρ-ηρ-ώς*. Apparently of all forms of the active the feminine participle has resisted longest the attacks of assimilation.

In the perfect middle system ablaut III has generally survived: *εἷμαι* (*Ϝε-Ϝσ-μαι*) : *ἕσ-σα* ; *κέ-κλι-μαι*, *ἔ-σσυ-μαι* ; *κέ-χυ-μαι*, *εἵμαρ-ται* and *ἔμβρα-ται* (Hesych.) ; *ἔ-φθαρ-μαι* ; *ἔ-σπαρ-μαι*, *δέ-δαρ-μαι*, *κέ-καρ-μαι*, *πέ-παρ-μαι*, *τέ-ταλ-μαι*, *ἔ-σταλ-μαι*, *τέ-τα-μαι*, *πέ-φα-ται*, *ἀλ-ήλιμ-μαι*, *ἐρ-ήριγ-μαι*, *ἐρ-ήριμ-μαι*, *μέ-μιγ-μαι*, *τέ-τυγ-μαι*, *πέ-φυγ-μαι*, *πέ-πυσ-μαι*, *ἔ-στραμ-μαι*, *τέ-τραμ-μαι*, *τέ-θραμ-μαι*. In roots of type A, ablaut III, as usual, necessarily coincides with ablaut I : *ἔ-ζεσ-μαι*, *ἔ-στεμ-μαι*, *ἐν-ήνεγ-μαι*, *εἴ-λεγ-μαι*, *λέ-λεγ-μαι* ; such forms as these have given rise to others made with the same vowel, where ablaut III would be historically correct and possible : *πέ-πλεγ-μαι* (cf. *ἐ-πλάκ-ην*), *κέ-κλεμ-μαι* (cf. *ἐ-κλάπ-ην*), *βέ-βρεγ-μαι*, *πέ-φλεγ-μαι*, *ἔ-στεγ-μαι* for *κέ-κλαμ-μαι*, etc. ; then also forms *ἔ-ζευγ-μαι*, *δέ-δειγ-μαι*, *λέ-λειμ-μαι*, etc. From roots of class BB : *λέ-λᾰσ-μαι* : *λέ-ληθ-α* ; *πέ-πο-ται* : *πέ-πω-κα* ; *πέ-φαν-ται* : *πέ-φην-α*.

The Gothic as the Sanskrit has preserved the relation between strong and weak forms in verbs of class AA almost without a flaw : *gêb-un* (= *gĕ-gb-un*) : *gab ; bêr-um* (= *bĕ-br-un*) : *bar ;* here also the only relic of the participial formation : *bêr-usjos ; skul-un : skal ; mun-un : man* (*μέ-μα-μεν* : *μέ-μον-α*); *stig-un : staig ; hluf-un : hlaf ; bund-un : band*, etc. In other Teutonic dialects traces of this difference have impressed themselves upon certain consonants also (Verner's law) : see above p. 312 ff.

Nominal Formations.

13. Verbal adjectives in *-τός* and *-τέος* = Sk. pass. participles in *-tas* = Goth. pass. participles in -þ(*a*)*s* and *d*(*a*)*s* accent the suffix and accordingly appear with ablaut III. In Greek this condition appears in the following cases : *ἄ-τι-τος*, *ῥυ-τός*, *πλυ-τός*, *κλυ-τός*, *μορ-τός* and *βρο-τός*, *φθαρ-τός*, *σπαρ-τός*, *δρα-τός* and *δαρ-τός*, *καρ-τός*, *σταλ-τός*, *βα-τός*, *τα-τός*, *αὐτό-μα-τος*, *φα-τός*, *ἐρα-τός*, *πισ-τός*, *ἐρικ-τός*, *ἄ-ϊσ-τος*, *στιπ-τός*, *ἄ-θικ-τος*, *τυκ-τός*, *φυκ-τός*, *ἀνά-πυσ-τος*, *ῥαπ-τός*. Roots of type A as usual cannot differentiate ablaut III from I : *ἐκ-τός*, *λεπ-τός*, *πεκ-τός*, *πεπ-τός*, *ζεσ-τός*, *λεκ-τός*, etc. ; they perhaps were the starting point of illegitimate formations containing ablaut I where III was possible, *e. g.* *ἐγερ-τέον*, *φερ-τός*, *ἄ-δερκ-τος*, *ἄ-φλεκ-τος*, *στρεπ-τός*, *μεμπ-τός* and even *ἐρεικ-τός*, *δεικ-τέον*, *πευσ-τός*, *ζευκ-τός*, etc. These false formations in the course of the

development of the language away from its original laws and materials have become on the whole the more common method for verbals. From roots of class BB: *θε-τός, δο-τός, ἄ-λασ-τος*, but also (and this method has become the preponderant one) *τᾱκ-τός, λᾱπ-τός, πᾱκ-τός*, etc. For the Sanskrit and Gothic participles see p. 296.

14. The abstract nouns in *ti* (*σι*) originally had the tone on the suffix, therefore ablaut III: *τί-σις, ῥύ-σις, χύ-σις, δάρ-σις, κάρ-σις, στάλ-σις, τά-σις* (*κτά-σις* in) *ἀνδρο-κτα-σί-η, πίσ-τις, τύξις, φύξις, πύσ-τις, ῥάψις, ἀγαρρίς· ἄθροισις* (Hesych.) From roots of type A necessarily: *πέψις, ξέ-σις, λέξις, ὄρεξις*. Thence the *ε* has spread over by far the largest part of these nouns: *δέρ-ρις* (with *δάρ-σις*), *ῥεῦ-σις* (with *ῥύ-σις*), *φεῦξις* (with *φύξις*), *πεῦσις* (with *πύσ-τις*), *πλέξις, θρέψις, μέμψις*, etc. From roots of class BB: *φᾰ́-τις, στᾰ́-σις, δό-σις, θέ-σις*, etc. For examples of this formation in the kindred languages see p. 296; of class BB cf. Lat. *stă-ti-o*(*n*), *ră-ti-o*(*n*), *af-fă-tim*.

15. A number of adjectives in *ra* (*ρο-*) have the accent on the suffix and abl. III: *ἐρυθ-ρός* = Sk. *rud-irás* = Lat. *ruber; ψυδ-ρός, λιβ-ρός, λυγ-ρός, στιφ-ρός, ἐλαφ-ρός, γλυκ-ερός, στυγ-ερός*; from roots of class BB: *μᾰκ-ρός*: *μήκ-ιστός*; *σᾰπ-ρός*; *τᾰκ-ερός*; *πᾰγ-ερός*, etc.; Sk. *rudh-irás, rud-rás, çuk-rás, çubh-rás, gṛdh-rás*, etc.; Goth. *dig-ra* in *dig-rei*(*n*). Exceptionally with abl. II: *σφοδ-ρός, φοβ-ερός, πλοκ-ερός, τρομ-ερός*, the last three probably denominative formations.

16. Oxytone adjectives in *u* (*υ*) occur only from roots which contain linguals and nasals. They have therefore been collected and treated on p. 296. Add *γλυκ-ύς*: *γλεῦκ-ος*.

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